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ABSTRACT

The Communication Technology and Policy section of the proceedings contains the following eight papers: "Effects of Home Computer Use on Adolescents' Family Lives: Time Use and Relationships with Family Members in Taiwan and America" (Mine-Ping Sun); "Computers, Ambivalence and the Transformation of Journalistic Work" (John T. Russial); "The Virtual 'Newspaper of Record'" (Shannon E. Martin); "Universal Service and the National Information Infrastructure: A Critical Examination of the Literature" (Brennon M. Martin); "The Role of Private Philanthropic Foundations in Communications Policy Making" (Katharina Kopp); "Facing the Future: Attitudes of Journalism Educators and Students about New Media Technology" (David Craig and others); "Electronic Newspapers: Toward a Research Agenda" (Glen T. Cameron and Patricia A. Curtin); and "Who Owns Digital Rights? Examining the Scope of Copyright Protection for Electronically Distributed Works" (Elizabeth Atwood-Gailey). (RS)

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Effects of Home Computer Use on Adolescents' Family Lives:
Time Use and Relationships with Family Members in Taiwan and America

Submitted to

Communication Technology & Policy

Council of Division of Association for Education

in Journalism and Mass Communication

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ABSTRACT

The present study examined the area of adolescent computer users in USA and in Taiwan by asking respondents to describe how they use computer in the home, and to evaluate relationships with family members according to the amount of time spent using the home computer. The results show that several differences of home computer use exist between respondents of the two countries. Taiwanese adolescents' major function of computer use is entertainment, while American adolescents' is word processing and other practical applications. SES and parents' background are strong factors in explaining the adoption of home computer in American households, while only father's profession is associated with adoption in Taiwanese households. However, computer use has no association with adolescents' relationships with family members in both countries.

Effects of Home Computer Use on Adolescents' Family Lives: Time Use and Relationships with Family Members in Taiwan and America

I. Introduction

In the past decade, the rapid diffusion and mass production of computer technology have helped bring personal computers and video games into the great majority of U.S. homes with children. In 1982, at least 1 percent of American homes possessed a microcomputer (Lambrecht & McClelland, 1982). In 1993, market researcher Link Resources Corp. estimated that one out of three American households has a personal computer--some 32 million in all (Kirkpatrick, 1994). Mark Stahlman, a consultant of New Media Research, has predicted (Arnst, 1993, Nov. 22) that personal computers will be in half of all U.S. homes by 1998 and Channel Marketing Corp. suggested that every home will have 2.5 personal computers by 2000. "Just like they have more than one phone and one TV," said R. W. Stearns, vice president of corporate development for Compaq Computer Corp. (Arnst, 1993, Nov. 22, p. 100).

Such growth is not surprising. Rather, it is inevitable, since the family and the home computer "form a potentially unique and ideal marriage" in the emerging information society (Wakefield, 1986). This increasing adoption of computing technology represents a new opportunity for a particular kind of computing experience in American homes.

In Taiwan, the world's biggest providers of hardware parts for personal computer, the fast diffusion of computers at households follows the American model. Aggressive promotion in the domestic family market just started at the end of the 1980s. However, home computer sales increased rapidly and household penetration has reached 13.56% by 1993 (DGBAS, 1994); a newspaper survey even found that the penetration increased from 15% by 1989 to 32% by 1994 (Chou, 1994, Nov. 9). Wang et al. (1994) found that 29.6 percent of respondents own a home computer.

Families can create, manipulate, transmit, store and retrieve information through this new medium and can access network, videophone and multimedia on the information superhighway. In the near future, some experts even predict that home computers will be as popular as video cassette recorders or washing machines are today in households. However, the impact of home computers on families has failed to receive attention.

Recently, the family has been studied as a mediating influence in communication-related contexts, in terms of family members' relationships (or social use of media), role performances and affective functioning. Television is vital in regulating family relationships (Lindlof, 1991). Since microcomputers (a. k. a. home computers or personal computers) have become popular in families, studies that consider family mediation of computing should be interested in many of the same topics as in early television- and VCR-family research. Such topics as time allocation shifts, parent-child communication and gender socialization to the medium recur in the first examples of household computing research (Dutton et al. 1987; Lindlof, 1991).

As to the social use of home computers, current researchers have focused on the related topics of adult users. Little work has addressed how adolescents--the real mainstream home computer users in the near future--make use of the new medium. In the past years, many young users were much more comfortable with computers than their parents, and then more and more families got the first home computer at the request of children (Squire, 1983, Sep.).

Taiwanese children's home computing experience has also largely been neglected by researchers. Children aged 10-18 were the most avid computer users in terms of both frequency and length of use, compared to the same age group in Japan, Korea and China (Greenberg et al. 1991). People aged 15-20 are one of the two most popular Billboard Bulletin Service (BBS) users group (Ke, 1993). To the computer industry, the main consumer groups are from people aged 12-19 and 20-29 which share 73% of domestic market (Chou, 1994, Nov. 9). Adolescents are not only the key persons to require a home computer but also are the most frequent and active users in homes.

It is important that we begin to understand how the new medium is used and experienced by the adolescents. This includes examining the different experiences of American adolescents, who are in a relatively matured market with more competitive and more variety of services, and adolescents in Taiwan, where the market with limited software and hardware services is just developing.

For family and mass communication research community, the cross-cultural study would be a source to know, between an oriental society and a western society, how a new information technology in households affect differently on family lives in terms of different family structure. And more, as a main player of mass media and economic development in the area of Pacific-Asia rim, Taiwanese experience of computer use open a window for mass media operators who are interested in the Asia market.

This paper is to build on what we already know about home computer use and family communication, and to provide comparative empirical data for two countries. It aims at ascertaining if differences exist in participation in family activities, interaction with family members and conflicts among family members, e.g., adolescents and parents, adolescents and siblings, according to the amount of time spent using the home computer.

II. Literature Review

A. Characteristics of home computer users

Studies have indicated that social-economic status was a main factor for the first consumers who adopted home computers. One of the first investigations into the diffusion of microcomputers was conducted by Rogers with 77 owners of home computers (Rogers & Others, 1982). They have found that these early adopters of home computers were technical and socio-economic elites, who were highly educated, well-to-do, middle-aged and male. Rogers (1986) reported that one of the most striking characteristics of early-adopters of new communication technologies was their socioeconomic status. Later studies showed that these characteristics typified the adopters of microcomputers in the U.S. (Anderson & Harris, 1984; Dickerson & Gentry, 1983; Vitalari et al., 1985; Venkatesh & Vitalari, 1986).

However, as the price of personal computers has declined, the importance of socioeconomic status variables has diminished (Caron et al., 1985; Deringer, 1986). Younger, less-well-to-do, less-educated persons with young children are sharing the home computer pie (Ke, 1993; Schweitzer, 1991). In the peak of marketing promotion, children are more and more popular home computer users (Deringer, 1986; Oates et al., 1986). In the last three years, entertainment and education software for children, labelled as "edutainment", has been as popular as children's books and records in supermarkets (Kantrowitz, 1994, May 16).

B. Home computers in the family

Part of the impetus for much of the research into home microcomputing came from debates about its social impacts on normal family interactions, family leisure activities and household functions (Dutton et al., 1987; Lindlof, 1991). Three decades after the TV first became a part of family life, the functioning of family subsystems, such as spousal dyads and sibling interactions, have been dramatically altered by its influence (Dede & Gottlieb, 1984). Will microcomputers have a similar impact on family culture?

In the following paragraphs, users' time allocation and relationships with family members will be discussed.

a. Shifts in time allocation

Studies of communication behavior not only have paid less attention to the relationship between mass media and interpersonal communication. The studies have also neglected the important variable of time use.

Sociologist Bouhdiba (1984) pointed out the need to assess changes in time use when investigating issues of social change. The concept of time use is a relatively new topic in new media study; only few scholars have touched this area unintentionally (Dutton et al., 1987; Greenberg & Lin, 1989; Schweitzer, 1991) or intentionally (Vitalari et al., 1985).

Computers have generally been viewed as time saving devices. However, computers are also very effective time consuming devices which force users to reallocate their limited time and change the ways they perform tasks.

Since time is a finite human commodity, computer use forces the reallocation of time from other activities. Computer use can subtly and implicitly move users to reprioritize their activities and change their behavior. From this perspective, time is the invisible hand by which computer use rearranges social action (Vitalari et al., 1985).

The limited studies of time shifts provide evidence that home computers may cause some changes in family life in terms of media use, family activities participation and communication.

Several studies focused on time allocation shifts of a few activities, such as time consuming with different media or family leisure activities. Results indicated that users watched less TV (Dede & Gottlieb, 1984; Olson et al., 1985; Rogers, 1986; Vitalari, 1985), as well as decreased participation in outdoor recreation, hobbies, sports, sleeping (Vitalari et al., 1988) and in time spent with family/friends (Bird, et al., 1990; Caporael & Thorngate, 1984) following the purchase of home computers.

b. Computer users and family members

In studies of leisure and family interaction, findings suggest that shared leisure activities enhance family communication and interaction. Orthner (1978) built up a typology of three patterns of leisure activity interaction. Individual activity is done alone without communication with others, e. g., reading. Parallel activities are those that engendered little or no family interaction, e.g., watching TV or a movie with others. Joint activities require those persons join with other family members and include communication and interaction, e. g., visiting family or friends.

Home computers have been credited with increasing individual leisure activities at the expense of parallel and joint activities. Some argued that this change would lead to a breakdown in family communication and interaction (Mitchell, 1986). However, several computer-use and education studies and observations have confirmed that owners of computers are more likely than others to share their household with a child, to have a more positive father-son relationship and to increase communication and cooperation between parents and children (Anderson and Harris, 1984; Bird, et al., 1990; Ferrari, 1985; Squire, 1983; Vitalari, et al. 1985).

Dede & Gottlieb (1984) reported that although adults and children spend time (alone or together) working with computers, the major activities displaced by computer use are TV viewing, reading, sleeping and working. "All of these are typified by generally low levels of interaction with other family members, so the computer is evidently not significantly decreasing the overall amount of social interaction within families" (p. 18). They concluded that the home computer did not seem to further alienate or isolate family members from one another. In about one-quarter of their sample families, computers were even found to serve as a means for shared experience and communication across genders and generations.

Although there have been reports of little or no change in interaction among family members after acquiring a home computer, research points out that home computer use could lead to spousal conflicts (Bird, et al., 1990).

In Taiwan, there is only one study about computer time use (Ke, 1993). The research addressed that BBS users lost almost two hours of sleeping every day. In addition, amounts of time spent in chatting and in leisure activities were less than people did in general.

These studies demonstrated that computer use may lead to users' time reallocation and may change interpersonal relationships with friends/family members.

No study has yet examined the responses of adolescent home computer users. This study differentiated between adolescents living in homes with computers and without computers, and then distinguished among home computer users in terms of their media use, family life and relationships with family members.

The following questions were derived from the existing research on microcomputers in the home:

Q1: How do computer households and non-computer households differ in terms of family's social-economic status, parents' educational background and professions between the U.S. and Taiwan?

Q2: How do adolescents in computer households use the computer in the home?

Q3: What are the social impacts of using computers in the home? Do users differ from non-users in their time allocation, participation in activities with family members, interaction with family members, and conflict with parents and siblings by the time they spend using a home computer?

It was hypothesized that there would be significant differences among adolescents by level of time spent using their home computer, time allocated to mass media use, family life activities, and interaction and conflicts with parents and siblings.

III. Method

A. Questionnaire

Adolescents in the two countries were asked to evaluate their participation in a series of life activities, including interaction with family members both prior and after adoption of the home computer. Users were also asked how often there was conflict with parents and siblings about the amount of time spent using home computers.

B. Samples

Students were chosen as a source of adolescents for the study. Two groups of high school students were surveyed; one group comprised American students in Southeast Ohio; the other group was composed of students in Taipei and a suburb of Taipei in Taiwan.

C. Administration in the U.S.A.

In-school questionnaires were administered to 183 10th to 12th grade students sampled from those attending area high schools in Southeast Ohio during May and June of 1994. The 6-page questionnaires, including an illustrated cover page, were distributed by agents selected by the researcher. Students were asked to fill in spots on computer answer sheet. It was hard to get enough responses without schools' cooperation. We found some difficulties with limited size of samples in the process of analyzing data, so the next survey sample size is enlarged.

C. Administration in Taiwan

Self-report questionnaires, on the basis of the developed questionnaire used with American adolescents, were distributed to 389 10th to 12th grades from Taipei and Taoyuan. The former is Taiwan's capital, the latter is a less developed city near Taipei. In-class questionnaires were distributed by the researcher and trained assistants and were completed in December of 1994. Students were asked to respond directly on the questionnaire sheets.

Both surveys' subjects were evenly divided by gender. However, subjects in Taiwan were more focused in the 10th and 11th grades; 12th grade students, who were supposed to take the college entrance examination the following year, did not have sufficient time to participate leisure activities.

D. Definition of variables

In the following section, different terms in the study will be defined in some depth.

a. Demographic attributes

The focus here was on gender, age, family composition, family background and social-economic status (SES). Family composition was assessed with the number of children and parental structure, i.e., two-parent families, single-parent families.

Family background was assessed with parents' education and profession as demographic variables. Subjects were asked to assess and report their own SES levels.

A Chi-Square analysis was used to investigate the association in ownership and non-ownership with family background.

b. Computer use in the home

To assess how adolescents use home computer, students were asked how long they use computer in different functions every week. Functions of home computer use included education, entertainment, word processing, data base access, electronic communication, electronic shopping, home budgeting, graphic design and other responses. Another is "With whom do you use a home computer most of time?" The categories included parents, siblings, friends/peer, yourself and others.

c. Use of other mass media

To assess the amount of time spent consuming various mass media, participants were asked the frequency of use of other mass media, including television, VCR, newspaper, computer books and magazines, and non-computer books and magazines.

d. Leisure activities

Three patterns of leisure activity interaction were adopted from Orthner's typology. Subjects were asked how often they attended either individual or parallel activities, which included attending movies, plays or concerts, spectator sports, recreational activities, and how frequently they went shopping. Sleeping, a main activity identified by adult users in previous surveys, was also investigated by asking whether subjects increased, decreased or experienced no change in their sleeping habits after obtaining a home computer.

e. Interactions with peers/friends

Joint activities included interaction in intra-family activities with peers/friends and in inter-family activities with parents and siblings. Students were asked how often they socialized with friends, visited relatives, visited friends/relatives by telephone, and how often they shared information with peers/friends.

f. Interaction with family members

Users' relationships with family members were examined through questions concerning how often respondents shared computer information with their father, mother, brother(s) and sister(s). Respondents were also asked to compare the amount of time spent on family activities before and after they obtained a home computer. Investigated activities included talking or communicating with the respondent's father, mother, brother(s) and sister(s); attending functions, e.g., movies or sporting events with family members; or spending leisure time with family members.

Respondents indicated their responses on a 5-point scale, which ranked frequency of activity as never, seldom, several times a month, several times a week, and daily. Time spent on family activities after acquiring a home computer was measured by a scale which ranked time change as decreased a lot, decreased, no change, increased, and increased a lot.

g. Conflicts with family members

Conflict was measured with the items, "How often is there conflict between you and your parent(s) or guardian(s) about the amount of time you spend using the computer?" and "How often is there conflict between you and your sibling(s) about the amount of time you spend using the computer?" Five response choices ranging from decreased a lot to increased a lot were available.

h. Time consumed with home computers

The main variable, the amount of time spent on the home computer, was investigated in two ways. In one question, U.S. subjects were asked to report how many hours they used a computer per week on a six-level scale: 0 hours, less than 2 hours, 2-4 hours, 4-10 hours, 10-20 hours and above 20 hours. In the second question, students were asked how many hours per week they spent on different functions on the same six-level scale. However, we found the function of ordinal variable was limited in analyzing.

So in the second survey, respondents in Taiwan were asked to fill in the amount of time spent on computers in terms of half-hour units, e.g., 0.5 hours, 1 hour, 1.5 hours, etc. Responses to this question were coded by minute units because respondents filled out answers directly on the questionnaires instead of filling in spots on a machine-readable computer answer sheet. By doing so, we may determine the total amount of time spent with the home computer and with various other functions, respectively.

A Chi-Square analysis was used to determine whether there was an association in users' time allocation with mass media use, leisure activities, interactions with family members and peer/friends, and conflicts with family members.

For the analysis of difference, users were divided into groups of approximately equal size, representing three levels of weekly home computer use time: low (0-2 hours per week), moderate (2-4 hours per week), or high (5 or more hours per week). Subjects' participation activities were plotted on one of two different variables, each of which was divided into three levels: rare (never and seldom); often (several times a month); and always (several times a week and daily); or decreased (decreased a lot and decreased), no change and increased (increased and increased a lot).

IV. Results

Before determining the use patterns of the two sampled groups, it is first essential to know about whom we are speaking.

A. Demographic attributes

There were interesting demographic differences between American and Taiwan respondents that may affect their propensities to own and use home computers. Table 1 shows that of the Taiwan sample (389 respondents), 52.2 percent were males and 47.8 percent were females. A majority of respondents were 16 or 17 years of age and 85.9 percent came from two-parent homes. Of the American sample (183 subjects), 46.4 percent of respondents were male and 53.6

percent were female. The age cohort structure was slightly different (18.0 percent were 15 years of age; 28.4 percent were 16; 31.1 percent were 17; and 21.3 percent were 18 years old).

Although most of the respondents in both countries were from middle class families, the proportion was different. Three quarters (75.8%) of the Taiwan students reported they came from middle class families, while only half (53%) of American students reported the same. On the other side, more American respondents reported they came from upper (3.8%), upper-middle (29.5%), lower-middle (7.7%) and low (14.4%) class families. This indicates that these self reported U.S. families' SES of students was more evenly distributed than that of Taiwan families, although the gap between the rich and the poor in Taiwan is closer than that in America.

A possible reason to explain the difference is that the perception of SES is different between two culture. Chinese are always more humble, low-profile, and moderate. They are getting used to identifying themselves as a middle class. And more, Taiwanese adolescents cannot identify criteria of SES as precise as American young people.

Of further interest, the number of other children in the respondents' households was reported. Among U.S. respondents, there was an average of 1.89 children per family. Among respondents in Taiwan, there was an average of 2.8 children per family.

Most respondents in both groups reported belonging to two-parent families. Of American students, 65.6 percent reported belonging to a two-parent family headed by a natural father and mother. A further 10.4 percent of respondents reported that they reside with one natural parent and one step-parent, or with stepfather and stepmother. Single-parent families were reported by 15.3 percent of respondents.

Of Taiwan students, the two-parent family unit was reported by 85.9 percent of respondents; 1.6 percent reported living with one natural parent and one step parent; single parents headed 5.9 percent of respondents' households; and 6.7 percent reported residing with relatives or residing off campus.

B. Characteristics of home computer ownership and users

Question 1, which focused on this study's specific interest in home computer users, requires identifying home computer penetration and user rates in this age cohort. Table 2 indicates that home computer *ownership* was reported to be 53.5 percent (208 respondents) of the selected homes in Taiwan, and 63.9 percent (117 students) of American respondents' homes. Both rates were higher than their respective national averages. *User* penetration rates were 40.1 percent (156 respondents) in Taiwan, and 60.7 percent (111 respondents) in the United States. The U.S. sample included higher owner- and user-penetration than Taiwan's. There were more young non-users among computer-owning families in Taiwan (13.4 percent, or 52 respondents) than in the United States (3.2 percent, or 6 respondents).

The background characteristics of respondents are also potentially important indicators of home computer use. For the Taiwan sample, Chi-Square figures for father's education (X2= 6.76, p= .08), mother's education (X2= 7.05, p= .07), mother's profession (X2= 4.24, p= .12) and SES (X2= 2.36, p= .50) with home computer ownership were not statistically significant.

Father's profession correlated significantly with computer ownership (X2= 8.98, p= .03). Table 3 shows that 115, or 58.1 percent of respondents in households with computer, the father is more likely to be in professional or white collar class. In households without computer, 93, or 57.1% of respondents, the father is more likely to be in labor class, farmer, or not working.

Analysis of family background and computer use in the U.S. survey produced results that were more consistent with previous findings. For the U.S. sample, father's education (X2= 37.60, p= .00), mother's education (X2= 27.10, p= .00), father's profession (X2= 25.27, p= .00) and SES (X2= 15.78, p= .00) correlated significantly with home computer ownership; only mother's profession did not correlate significantly (X2= 7.33, p = .06).

Table 4 demonstrates that of ownership, 95, or 87.2% of students' fathers had graduated from college or above. Of non-ownership, 30, or 53.6% students' fathers had a similar level of education. Table 5 shows that more mothers(89, or 78.8% vs. 37, or 63.7%) of home computer ownership had college or above education degree than non-ownership's mothers did.

Table 6 demonstrates that of ownership families, 89, or 79.5% respondents had fathers who were more likely to be in professional or white collar class, while more than half (34, or 59.6%) of non-owners' fathers were more likely to be in labor class, farmer or not working. Table 7 shows that 107, or 93% of ownership, came from upper, upper-middle and middle class families, while 8, or 6.9% of computer owners, came from low and lower-middle class families. Of non-ownership, less students (51, or 78.5%) came from middle or upper-middle families; more students (14, or 21.5%) came from lower and lower-middle families.

C. Computer use in the home

There is a significant dichotomy in reported use between U.S. and Taiwan home computer users. American respondents reported that word processing constituted their most important use of home computers, followed by entertainment, educational purposes, database access and electronic communication. Respondents in Taiwan reported that they used home computers for entertainment and fun, followed distantly by education, word processing, electronic communication, and database access. While a simple listing of use categories does not impart the idea of a major difference in use patterns between the respondents of the two countries, the means of reported time spent in using these categories of computer services show a radical difference. See Table 8 for indications of this difference.

However, both countries' adolescents preferred to use home computer alone. Table 8 shows that of Taiwanese students, 66.7% (or 104 of respondents) use computer in home alone most of time, while 68.5% of the U. S. adolescents use computer alone. Taiwanese respondents have more siblings and less space in households; more users (42, or 27.2%) use computer with siblings than American users (5, or 4.5%) do. On the other side, more American children in this sample use computer with parents (16, or 15.2% of students) than Taiwanese children do (5, or 3.2% of respondents).

D. Mass media use

Mass media use, including reading general books and magazines (X2= 12.93, p= .01) and computer books and magazines (X2= 10.36, p= .03), are significantly associated with home computer time use in Taiwan. Although TV (X2= 18.43, p= .00) and VCR (X2= 22.14, p= .00) watching, newspaper reading (X2= 15.74, p= .00) and sleeping (X2= 14.01, p= .00) are significantly associated with home computer time use, as well Chi-Squares are incalculable because of excessive cells with expected values less than 5.

According to this analysis, mass media use and computer use are independent in America (TV's X2= 3.15, p= .53; VCR's X2= 1.67, p= .80; books and magazines' X2= .85, p= .93; and computer books and magazines' X2= 5.28, p= .26).

The results demonstrates that in Taiwan, printed media use was associated with the amount of time spent in home computer use. Table 9 shows that, most home computer users experienced no change of time in reading general books and magazines; however, more moderate (14, or 31.1%) and heavy users (11, or 20%) increased the time spent reading general books and magazines. This finding is different from existing findings.

Also, reading computer books and magazines seems to be an important source to deal with computers. Table 10 indicates that of heavy users, more respondents (25, or 44.6%) were more likely to read computer books and magazines than moderate and light users did. The results suggested that the greater amount of time spent with home computer, the greater amount of time is also spent with general and computer books and magazines.

E. Leisure activities

The impact of home computer use on several posited leisure activities was investigated. Of these activities, attending movies (Taiwan's X2= 1.43, p= .83; America's

X2= 2,83, p= .59 respectively), plays or concert (Taiwan's X2= 8.57, p= .07; America's X2= 4.21, p= .38), spectator sports(Taiwan's X2= .37, p= .98; America's X2= 1.62, p= .80), recreation (Taiwan's X2= 2.83, =.59; America's X2= 5.21, p= .27), shopping (Taiwan's X2= 3.84, p= .43; America's X2= .55, p= .97) and sleeping(Taiwan's X2= 14.01, p= .01; America's X2= 15.65, p= .00), all variables except sleeping had no statistical association with the amount of time in home computers. There is a statistically significant difference of sleeping time associated with computer use in Taiwan and America, however, the results cannot be accepted because of excessive cells with expected values less than 5.

F. Interactions/conflicts with family members

The affect of computer use on several interactions with friends/family members was also investigated. Of these variables, interaction with friends/peers in term of socializing with friends (Taiwan's X2= 1.87, p= .76; America's X2= 1.10, p= .89), visiting relatives (Taiwan's X2= 3.62, p= .46; America's X2= 7.07, p= .13) and calling to friends (Taiwan's X2= 9.47, p= .05; America's X2= 4.01, p= .40) had no statistical association with computer time use. Communication with father (Taiwan's X2= 2.16, p= .71; America's X2= 2.56, p= .63), mother (Taiwan's X2= 2.01, p= .73; America's X2= 7.25, p= .12), brothers (Taiwan's X2= 4.03, p= .40; America's X2= 7.20, p= .13) and sisters

(Taiwan's X2= 3.59, p= .46; America's X2= 8.27, p= .08) had no association with computer use in both countries. Participation in family functions in the U. S. (X2= 4.81, p= .31) and sharing family leisure time in Taiwan (X2= 8.60; p= .07) were not associated with computer time use either.

Although several variables had statistically association with computer time use, i.e., attending family functions (X2= 11.61, p= .03) in Taiwan, sharing leisure time with family in the U. S. (X2= 12.85, p= .01) and conflicts with parents over computer use in both countries (Taiwan's X2= 15.79, p= .05; America's X2= 10.23, p= .04), due to excessive cells with expected values less than 5, the results may not be accepted. In addition, no conflicts over use were reported with siblings in both countries (Taiwan's X2= 7.85, p= .45; America's X2= 5.76, p= .22).

It revealed that the amount of computer use had no association with users relationship with family members in terms of sharing information, talking and communication, participating in family activities and conflict with parents and siblings.

IIV. Discussion

We may see four primary findings that can be discussed.

A. About demographics

Taiwan and U.S. home computer ownership are affected by profound differences in demographic characteristics of the respondents. While in Taiwan, only father's profession is significantly correlated with computer ownership in the home, in the United States only the mother's profession did *not* correlate with ownership. The findings indicated that in U.S., the diffusion of a new medium still is related to adults' social-economic status. In Taiwan, personal computer is a relatively new and expensive electronic appliance in households. Although Taiwanese parents are very willing to invest in education for their children, the concept of applying the product to home functions only can be more perceived through office computing experience. So a single important variable has emerged as the basis for purchase decision-making--father's profession.

And second, it is not easy to investigate the factors to determine owning a new medium over a short period of time. Home computers have had over two decades to work their ways into American homes; 72.7 percent of American respondents reported that they have owned their home computer for 3 or more years. On the other hand, 50 percent of Taiwan respondents reported owning a home computer for 3 or more years.

B. About computer use in the home

Further, several differences were noted in uses of particular computer functions between respondents of the two countries. Taiwan respondents overwhelmingly reported entertainment as their major purpose in using home computers, distantly followed by word processing and other practical applications. While entertainment also ranked high with the American respondents, other, practical uses were also frequent use-targets, including word processing and database access.

In considering how to explain this dichotomy of use, several major points come to mind. First, Chinese-character software is difficult and complicated to key in. Word processing, then, is a difficult and arduous task requiring much experience. This is not the case with readily available word processing, database and communication software in the United States. American-used software is easy to learn and use, and is designed around the simpler key-in characteristics of the English-language alphabet.

Second, in Taiwan education-related software is not as accessible as such software in the United States. Thus, the opportunity to obtain and use education-related software is much more limited in Taiwan. However, the market for entertainment software in Taiwan is dominated by Japanese corporations which have developed a strategy of indirectly promoting their computers to families through directly promoting their entertainment programs.

Thus, while home computers do fill an entertainment function in the United States, it is not their primary function. In Taiwan, entertainment is the primary function of home computers as other functions are largely unused.

For adolescents, then, the home computer has become a primary entertainment tool.

Early in the development of the American computer market, consumers used computers in the home primarily for entertainment purposes; they were seen as playthings for hobbyists. As the market matured, the function of the home computer gradually shifted to more practical applications. Taiwan, in the early stage of home computer adoption, is experiencing the same early tendency to see the product primarily in terms of its non-practical functions. In the near future, it is expected that multimedia service will be more competitive and video game products would gradually be replaced by edutainment software.

C. About mass media use

Home computer use in Taiwan affects the way and time adolescents use some other forms of mass media, while it has no influence on American adolescents mass media use. We may suggest that reading is a relative frequent leisure activity among Taiwanese adolescent computer users and it can not be replaced by computer use. On the other hand, in a less mature market, i.e., Taiwan, early adopters need more resources to deal with a new medium and to catch up with information trends in the world. So they are getting used to retrieve relative information from printed media. Because American adolescents are familiar enough with computer, no more information is needed. They do not need to reallocate their normal schedules of media use.

In addition, adolescents' video media use is not associated with computer use in both countries. We may suggest that TV and VCR viewing cannot be replaced by the other new medium at this moment. However, the appearance of the computer has begun to change the media ecology in households. Industry of media should not neglect the new development in the near future.

D. As to relationship with family members

Time use of computers has no influence on adolescents' family leisure activities and relationships with family members. The result seems to indicate that the amount of computer time use is not too heavy to affect family activities participation and interpersonal relationships with family members. In other words, adolescent computer users would not isolate or alienate themselves from friends and family members at this stage.

The Home computer is just a new guest in the households of these two countries. This study suggests that its influence to adolescents' family lives and relationship with family members is limited. However, the more capable and attractive the computer is, the more time adolescents will invest, and then will a greater gap of computer literacy between the user and family members emerge? A longitudinal study in two countries is needed.

Furthermore, gender and generation differences in home computer use will be interesting topics for future study. American studies indicated that gender difference existed in schools, but how about in households? Taiwan's survey (Chou, 1994, Nov. 9) reported no gender difference in computer learning, but how about in computer use either in homes or in schools? Besides, computer operation devices are relatively complicated to adults, so will it lead to a generation gap of information-access like the VCR does today?

Finally, a qualitative research about these topics is highly recommended. A more colorful, personally descriptive and interpretive study through in-depth interviews, focus group, or long-time participant observation will make the study of computer use in home more dimensional, deeper and humanistic.

Table 1: General Demographic Characteristics of Respondents

	Taiwan	United States
Sex		
Male	203 (52.2%)	85 (46.4%)
Female	186 (47.8%)	98 (53.6%)
Age (years)		
15	5 (1.38%)	33 (18.0%)
16	128 (32.9%)	52 (28.4%)
17	182 (46.8%)	57 (31.1%)
18	58 (14.9%)	39 (21.3%)
19	14 (3.6%)	1 (0.5%)
Other	2 (0.5%)	1 (0.5%)
Social Status		
Upper	0 (0.0%)	7 (3.8%)
Upper-Middle	62 (15.9%)	54 (29.5%)
Middle	295 (75.8%)	97 (53.0%)
Lower-Middle	31 (8.0%)	14 (7.7%)
Low	1 (0.3%)	8 (14.4%)
Missing	0 (0.0%)	3 (1.6%)
Family Composition		
# of children/per fam	2.8	1.89
Parental structure		
natural two-parent	334 (85.9%)	120 (65.6%)
single-parent	23 (5.9%)	28 (15.3%)
step-parent	6 (1.6%)	19 (10.4%)
Others	26 (6.7%)	16 (8.7%)

Table 2: Description of Computer Ownership and Users

	Taiwan	United States
Owners	208(53.5%)	117(63.9%)
Non-owners	177(45.5%)	66(36.1%)
Missing	4(1.0%)	0(0%)
Users	156(40.1%)	111(60.7%)
Non-users	229(59.9%)	72(39.3%)

Table 8: How do adolescents use computer in the homes?

Time Use of the Top Five Reported Functions*

Taiwan(minutes)		United States(scale 1 to 5)	
Entertainment	(156.22)	Word Processing	(2.26)
Education	(39.81)	Entertainment	(2.06)
Word Processing	(25.13)	Education	(1.70)
Electronic Communication	(19.79)	Database Access	(1.34)
Database Access	(18.01)	Electronic Communication	(1.30)

With whom do adolescents use a home computer most of time?

Parents	5 (3.2%)	16 (15.2%)
Siblings	42 (27.2%)	5 (4.5%)
Peer/friends	3 (1.9%)	5 (4.5%)
Myself	104 (66.7%)	76 (68.5%)
Others	1 (.6%)	3 (2.7%)
Missing	1 (.6%)	6 (5.4%)

*Different scales were used to measure respondents' reports from the two target countries. The Taiwan sample was asked to list actual time spent on each computer function, in increments of 30 minutes. The American student sample responded to a 5-point scale, thus their reported values are in terms of means of usage on that scale.

Table 3: The association of owning a computer and father's profession in Taiwan

```
                    FATHER'S PROFESSION
            Count
           Row Pct  prof     white    labor    others
                                                          Row
                         1        2        3        4    Total
PC
                1       10      105       76        7      198
  owners               5.1     53.0     38.4      3.5     54.8

                2        4       66       87        6      163
  non-owners           2.5     40.5     53.4      3.7     45.2

            Column      14      171      163       13      361
             Total     3.9     47.4     45.2      3.6    100.0
```

```
      Chi-Square                  Value           DF               Significance
--------------------          -----------        ----              ------------

Pearson                          8.97645           3                  .02961
```

Table 4: The association of owning a computer and father's education in the U.S.

```
                    FATHER'S EDUCATION
            Count
           Row Pct  graduate bachelor college  below hi
                                               gh         Row
                         1        2        3        4    Total
COMPUTER
             1.00       53       22       20       14      109
  owners              48.6     20.2     18.3     12.8     65.7

             2.00        7        5       18       27       57
  non-owners          12.3      8.8     31.6     47.4     34.3

            Column      60       27       38       41      166
             Total    36.1     16.3     22.9     24.7    100.0
```

```
      Chi-Square                  Value           DF               Significance
--------------------          -----------        ----              ------------

Pearson                         37.59780           3                  .00000
```

Table 5: The association of owning a computer and mother's education in the U.S.

```
                    MOTHER'S EDUCATION
            Count
          Row Pct   graduate bachelor college   below hi
                                                gh         Row
                          1        2        3        4    Total
COMPUTER
             1.00        41       28       20       24      113
  owners               36.3     24.8     17.7     21.2     65.7

             2.00         5        8       24       22       59
  non-owners            8.5     13.6     40.7     37.3     34.3

           Column        46       36       44       46      172
            Total.     26.7     20.9     25.6     26.7    100.0



      Chi-Square                      Value           DF              Significance
--------------------               -----------       ----             ------------

Pearson                             25.27323          3                  .00001
```

Table 6: The association of owning a computer and father's profession in the U.S.

```
                    FATHER'S PROFESSION
            Count
          Row Pct   professi white    blue     others
                    onal                                   Row
                          1        2        3        4    Total
COMPUTER
             1.00        54       35       20        3      112
  owners               48.2     31.3     17.9      2.7     66.3

             2.00        17        6       28        6       57
  non-owners           29.8     10.5     49.1     10.5     33.7

           Column        71       41       48        9      169
            Total      42.0     24.3     28.4      5.3    100.0


      Chi-Square                      Value           DF              Significance
--------------------               -----------       ----             ------------

Pearson                             27.09784          3                  .00001
```

Table 7: The association of owning a computer and family's SES in the U.S.

```
                    SES
              Count
            Row Pct  upper     middle    lower-mi low
                                         d                  Row
                           1         2         3         4  Total
COMPUTER
               1.00       49        58         6         2    115
  owners                42.6      50.4       5.2       1.7   63.9

               2.00       12        39         8         6     65
  non-owners            18.5      60.0      12.3       9.2   36.1

             Column       61        97        14         8    180
              Total     33.9      53.9       7.8       4.4  100.0


      Chi-Square                    Value             DF              Significance
--------------------             -----------         ----             ------------

Pearson                           15.77858            3                  .00126
```

Table 9: The association of computer time use and books & magazines reading in Taiwan

```
                   MAGAZINES & BOOKS                   Page 1 of 1
              Count
            Row Pct  decrease no change increase
                     d         e         d         Row
                             1         2         3  Total
PCTIME
               1.00          2        45         5     52
  light                    3.8      86.5       9.6   34.2

               2.00          4        27        14     45
  moderate                 8.9      60.0      31.1   29.6

               3.00          9        35        11     55
  heavy                   16.4      63.6      20.0   36.2

             Column         15       107        30    152
              Total        9.9      70.4      19.7  100.0


      Chi-Square                    Value             DF              Significance
--------------------             -----------         ----             ------------

Pearson                           12.92956            4                  .01163
```

Table 10: The association of computer time use and computer books & magazine reading in Taiwan

```
                   COMPUTER BOOKS & MAGAZINES
          Count
          Row Pct  rare     often    always
                                             Row
                        1        2        3  Total
PCTIME
            1.00       26       17       10     53
  light              49.1     32.1     18.9   34.0

            2.00       15       16       16     47
  moderate           31.9     34.0     34.0   30.1

            3.00       14       17       25     56
  heavy              25.0     30.4     44.6   35.9

          Column       55       50       51    156
           Total     35.3     32.1     32.7  100.0


      Chi-Square                  Value       DF            Significance
--------------------          -----------    ----           ------------

Pearson                         10.36177       4               .03476
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"Computers, Ambivalence and the Transformation of Journalistic Work"

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"Computers, Ambivalence and the Transformation of Journalistic Work"

Newspaper professionals have had a love-hate relationship with computers for more than two decades. Computers have greatly simplified such tasks as writing and rewriting and have made it quite a bit easier to edit copy. They have improved news-gathering by placing vast amounts of online information at journalists' fingertips, enabling reporters to sort extensive databases and find relationships that once would have taken months. In these ways, and others, computers have enhanced the professional abilities of news gatherers as well as editors. Computers also have turned some copyeditors into compositors, designers into electronic paste-up operatives and photographers into digital darkroom technicians.

Computerization has improved overall productivity and efficiency of newspaper pre-press operations by shifting work once done by production departments into the newsroom--automating the work of compositors and other blue-collar employees. And as a result, the profession of journalism has moved toward the craftlike work of production for a significant number of practitioners. This shift is where the deepest roots of ambivalence about newsroom computers are based, in a transformation of intellectual work that does not fit neatly into current theories about information technology and work.

Ambivalence itself is a problem -- it is an indicator of dissatisfaction -- and it is reasonable to suspect that ambivalence can lead to high turnover and brain drain, which have been cited as important issues facing newspapers.[1] But there are potentially greater concerns. One of the most serious issues in newsroom computerization, for example, is the loss of newsroom positions to production considerations, even as the percentage of such newsroom positions increases.[2] There is evidence to support this contention, but there is no analytical framework to ground it. Several studies indicate that paginators spend a substantial amount of their workday on production tasks, at least 20 percent and probably more.[3] If enough editors are not hired to make up for this loss of editing time, the redefinition of editing to include electronic makeup represents a significant loss of newsroom editing positions.[4] Other production-based systems, such as digital darkrooms, might have a similar impact.[5] But such effects are difficult to pin down because journalists adjust their behavior. They limit the time they devote to journalism in order to meet production needs. Consequently, it has been easy to dismiss such effects as transitory phenomena -- problems that will disappear as systems and training improve. Likewise, it is easy to marginalize the many concerns expressed anecdotally by journalists as carping or Luddism.

In the journalism academy, studies of computerization and work remain, on one hand, a loose collection of indicators of trouble, such as time constraints,[6] job dissatisfaction[7], burnout[8] and ambivalence.[9] On the other hand, there has been no systematic way to frame the various positive impacts of information technology, such as the improvements in newsgathering that result from electronic database access[10] and computer assisted reporting software and hardware.[11]

This paper is an attempt to analyze news work and computerization, to suggest a framework for understanding the impacts and to provide suggestions for empirical study. It will examine what has been reported about newsroom computerization in light of debates in fields that have more thoroughly analyzed and discussed issues of technology and work. It will argue that theoretical approaches outlined in sociology, industrial relations and management help explain the experience of news professionals who use advanced information technology. Newsroom experience suggests, however, that a crucial revision is needed if we are to better understand the impacts of computers on newspaper professionals, particularly the problematic impacts.

Background

About 20 years ago, newspapers began to introduce information technology into newsrooms and, in so doing, began to redefine the jobs of reporters and editors. The process began slowly with optical character recognition equipment -- the infamous "scanners" -- in the early-to-mid-'70s, moved rapidly into VDTs in the mid-to-late-'70s, and somewhat slowly into pagination[12] in the '80s. In 1984, management scholar Nancy Carter identified computers as a "predominate technology" in newspapers.[13] Since then, computerization of news work has intensified. Today, reporters use text-editing systems and library systems. Many use spreadsheet and database software as well as E-Mail and other internet services. Editors, graphic artists and photographers use all of the above as well as pagination, online and in-house graphics systems and digital darkroom and archiving systems.

Computers have been hailed as the journalists' powerful new tools, but in newsrooms, as in many other white-collar workplaces, computers are much more than tools. Because of computerization, many editors are now both journalist and printer. They spend much of their workday performing computer-based tasks that one or two decades ago were done by compositors and other production workers using craft-based technology. Pagination is the most noticeable example. Copyeditors and designers who paginate spend a significant portion of their time doing on a computer screen what composing workers did with Xacto knives.[14] A newer technology is the digital darkroom, which computerizes many of the tasks photographers traditionally performed in chemical darkrooms, such as "printing," adjusting contrast, cropping, dodging and burning. It also enables journalists to perform a variety of photo reproduction tasks that they had not performed before, such as scanning, color correction and color separation. Many "back shop" tasks of composition, makeup and photo reproduction have become the responsibility of newsroom personnel, and the result is a sharp reduction, if not elimination, of the back shop at many papers.[15]

In the U.S. newspaper industry, information technology has been viewed anecdotally and largely uncritically for several decades. According to Anthony Smith, "The United States enjoys an inbuilt national predilection for new technology, partly fostered by newspapers and journalism."[16] The bias in newspaper publishing, as in American society on the whole,[17] is to cheer on computers as the front-line troops in the march of progress. In 1964, for example, Robert Kenagy of IBM Corp. told the Associated Press Managing Editors Association that "the computer will remove a great deal of the drudgery that exists in the newsroom today and free all people in the editorial department to be far more creative." In his 1972 textbook Ink on Paper, printing and graphics expert Edmund Arnold said, "Used properly, computers can free the editor's mind from details and be a valuable tool toward the more creative aspects of editing."[18]

Computers have streamlined pre-press operations, enabling newspapers to reap substantial savings in labor costs and overall page-production time, and they have enriched many newsroom jobs. But along with the praise, journalists have complained about computers for years, particularly in certain job categories, and there seems to be growing awareness among managers that decisions to computerize news production operations have had unintended consequences for journalists. Newspaper consultant David Cole notes, for example, that "bright and dim spots come with all pagination systems."[19] At a newspaper industry conference in late 1994, Peter Bhatia, managing editor of the Portland Oregonian, explained one of the dim spots:

> "Most of the people who sit at pagination terminals would not have chosen to be newsroom compositors. They came into this business to be word people, not computer jockeys. So there is resentment by some and a lot more resignation to the task than enthusiasm."[20]

Paul McFarlane, systems editor of the Carroll County (Maryland) Times, which began paginating in 1993, says the biggest drawback to pagination is that "copyeditors become compositors." He noted that Times copyeditors call themselves "pagination monkeys."[21] Anecdotal comments often indicate fundamental concerns. What is the source of the ambivalence many journalists have voiced about technological change? How does it relate to the transformation of journalistic work? Answering this question requires focusing at the level of specific tasks.

Different jobs, different impacts

Though all newsroom jobs have professional content, there are substantial differences, and the benefits and burdens of computerization fall differently on different job categories. The following is an inventory of widely used computer systems in newsrooms and the principal tasks performed with these systems. Tasks are categorized as "journalistic," if the computer-based task has an analogue in traditional news work; "production" if the analogous task had been done by production departments before computerization, and "new" if there is no clear pre-computer analogue.

Newsroom computer systems and tasks

	Traditional	Production	New
Text editing systems			
Writing stories	X		
Editing stories	X		
Writing headlines	X		
Coding stories for output		X	
Pagination			
Designing pages on screen	X		
Assembling page elements for output		X	
Adjusting and aligning page elements		X	
Outputting pages		X	
Digital darkrooms			
Scanning images		X	
Enhancing images: dodging, burning, etc.	X		
Making color adjustments/corrections		X	
Making color separations		X	
Digital photo archiving	*	*	
Graphics systems			
Scanning art		X	
Enhancing scanned art--adding, eliminating detail	X		
Adding text to graphics	X		
Editing online graphics			X
Online libraries and databases			
Choosing databases, designing strategies	X		
Performing searches	X		
Gathering information	X		
Computer assisted reporting			
Data input/building databases			X
Data transfer and reformatting			X
Database sorting to find relationships			X
Using information in stories	X		
Internet services			
Exploring internet domains			X
Information and data gathering	X		
Finding sources by E-Mail			X
Interviewing by E-Mail	X		
Online editions			
Repackaging stories as online content	*	*	
Updating stories	X		
Hypertext and other coding, screen design	*	*	
Summarization, indexing	*		*
Linking pages			X
Interacting with readers (E-Mail, chat			X

* Task has characteristics of more than one category

The main difference suggested by the table is between systems used for news gathering and writing, such as text-editing systems and online libraries, vs. systems used for news presentation and processing, such as pagination and digital darkrooms. News-gathering/writing systems are primarily journalistic in character. They enable journalists to do the tasks they had done, often better or faster. News presentation and production systems may enable editors to do some journalistic tasks better or faster, but they also entail doing additional work -- work that had been done in production departments. Some systems share characteristics of both, such as graphic design systems, and some information technologies, such as online news systems, entail tasks that have no clear pre-computer analogue. In terms of jobs, the distinction is roughly between reporting and editing, though the categories are not exclusive.

The broad impact of newsroom computerization has been to redefine all of the tasks indicated in the table as journalism. For example, journalists now do electronic makeup, therefore electronic makeup must be journalism. Editors seeking copydesk jobs can expect to be asked to do electronic makeup, and journalism schools are expected to teach it.[22] Making color separations is becoming a journalist's task, therefore, it too must be journalism. But redefinition does not change the nature of those tasks. Is there a level at which such tasks conflict with more fundamental ideas of what constitutes journalistic work? If so, is this a likely source of ambivalence? In an era of technological intensification and convergence, many tasks will be "new" ones. What impact will these tasks have on journalistic work?

Communications research

Academic researchers have looked at the impact of computers on news professionals in general terms. Weaver and Wilhoit reported from their 1982-83 survey of American journalists that "perceived effects of new technologies are not clearly positive or clearly negative for a substantial proportion of journalists ... for most journalists the perceived benefits of new technology greatly outweigh the perceived liabilities." They note, however, that editors, particularly copyeditors, were the most negative about the impact of technology.[23] Burgoon, Burgoon and Atkin came to a similar conclusion[24]. Lindley reported that copyeditors whose careers spanned hot type and VDT systems felt that complexity of coding and production concerns had increased but so had their control over the product.[25] Those studies, and a variety of others that focused on such issues as the effect of VDTs on error rates[26] and perceived autonomy[27] preceded widespread implementation of news presentation and production technologies such as pagination and digital imaging.

Studies done in the last several years suggest greater impact on specific job categories and increasing ambivalence. Russial reported that pagination has given editors increased flexibility and control over the page makeup process but that it entails a production burden that can take time away from editing[28] and can lead to greater task specialization.[29] Underwood et. al. identify a "displacement effect" of pagination, which refers to the shift of production tasks into newsrooms and the consequent reduction in attention editors can pay to traditional editing.[30] Researchers have begun to examine issues at the level of work and organization in newspapers[31] but one must look outside the journalism and communications literature for broader theoretical perspectives on technological change and work.

Perspectives from other fields

Debate about computerization, work and organization has been robust in several fields --

sociology, industrial relations and management. These wide-ranging perspectives can be schematized several ways[32]. One approach is to look at the impact of computerization at the "human interface" -- the point where tasks, skills and technology intersect.

Some scholars, such as Braverman and Shaiken, argue that computerization degrades jobs through deskilling.[33] Some, such as Bell and Piore and Sabel, argue that computerization tends to enrich jobs because it increases the skill content ("upskilling");[34] Some, such as McLoughlin and Clark and Zuboff, are more equivocal, and perhaps their views are more suited to the complexity of factors that influence work and technology. They say that computerization can either enrich or degrade jobs depending on how jobs are designed and how workers and managers negotiate the use of computers.[35] Newspaper computerization suggests yet another possibility: Computerization can enrich some jobs through upskilling, degrade others through deskilling, and somewhat paradoxically, upskill and degrade still other jobs at the same time and by the same mechanisms.[36]

Labor process theory and deskilling

A good starting point to examine the issue of new technology and skills is Braverman, a neo-Marxist whose Labor and Monopoly Capital[37] set off a lengthy debate about skills and deskilling. Braverman, and later advocates of the labor process approach, argued that there is a deepening divide between mental and manual labor and that the routinization and simplification of many highly skilled blue-collar jobs was not a byproduct of new technology but the reason for its introduction. According to Braverman, capitalist owners and managers strive to deskill workers by separating the conception of work from its execution in order to control the workforce. A well-studied example is the impact of numerical control, which transferred the skill of machinists into computer programs.[38] Before numerical control processes were implemented, machinists planned and executed metalworking jobs. With numerical control, the conceptual function--the planning of the machine setup -- was shifted to engineers or computer technicians. Machinists became machine tenders--watching machines execute the jobs planned by others.

Braverman argues that deskilling is also the logic of technological change in white-collar work, and others have examined white-collar occupations, such as computer programming,[39] social work and engineering,[40] in his terms.

Braverman has been sharply criticized for oversimplifying the concept of skills and for overstating the role of deskilling as a conscious managerial strategy.[41] Labor process theory does, however, capture the fundamental impact of information technology on certain occupations. In printing, for example, linotype operators and compositors were deskilled; they lost their craft-based skills, and their control of the work, as computer typesetting replaced hot metal composition.[42]

Labor process theory, which is grounded in the separation of conception and execution of tasks, offers little help in understanding the impact of computerization on journalists. From the newsroom perspective, the computerization of production tasks was a strategic reintegration of conception and execution. It represented a return to the era of the "printer-journalist,"[43] and it was done to reduce costs and increase control. News production systems such as pagination and digital darkrooms represent further steps in which conception and production (execution) have been reunited.

Flexible specialization and upskilling

Flexible specialization entails a more optimistic view of technology than Braverman's and a much rosier view of the relationship between new technology and skills. This perspective, associated with Michael Piore's and Charles Sabel's 1984 book, The Second Industrial Divide, holds that rapidly changing product market conditions require a flexible core labor market--one that can quickly adapt to meet whatever challenges arise. It is a strategy of permanent innovation based on flexible multi-use equipment and multi-skilled workers, and it represents, in effect, a revival of the craft form of production.[44] According to Piore and Sabel, the computer is "an instrument that responds to and extends the productive capacities of the user.[45] Rather than degradation of work through deskilling -- the outcome predicted by the labor process school -- flexible specialization is seen as enriching work by increasing worker skills, or "upskilling."

Such a return to a craftlike organization of work has been hailed by some as the path to competitiveness. Critics, however, argue that flexible specialization fails to address the possibility that information technology can be used to substitute technology for human labor" or automate, as Zuboff uses the term. A second criticism is that flexible specialization may not result in upskilling, and that upskilling of jobs in the core labor market "may be associated with a deskilling of others" in the periphery.[46]

Like Braverman, Piore and Sabel are talking primarily of production contexts. In theory, flexible specialization may be a useful way to approach information technology in newsroom contexts. Given the plethora of different computer systems in newsrooms, the development of multi-skilled workers would seem to offer greater flexibility in news gathering as well as news presentation and processing.

In many newsrooms, elements of the core labor market -- copyeditors and page designers -- were retrained to handle pagination systems, and photographers were retrained to handle digital image processing. In some cases, the "core" labor market of journalists has been fragmented into professional editors and skilled operatives, who may be called "design assistants," "paginators," or even "Chief Quarkers."[47] The trend, however, has been toward inflexibility, not flexibility. One study of 12 newspapers found an increasing task specialization in paginating newsrooms, an outcome related to the cost of systems and the need to develop special expertise to use the systems efficiently.[48]

In effect, many professionals have become pagination production specialists.[49] A similar outcome is possible with digital darkroom systems, as photographers and copyeditors become digital imaging specialists. On one level, this may appear to be an "upskilling," but on another it is a degradation of professional work. Even though editors learn new skills, they have less time for their traditional journalistic tasks because they need to perform electronic production tasks.[50] This outcome echoes the newsroom's earlier experience with VDTs, when editors were required to take on a greater bundle of tasks -- primarily composition coding and proofreading -- previously done by compositors.[51] The technology may extend journalists' production abilities, but it also compromises their journalistic abilities.

Automating and informating

Another influential view of computers and work is that of Shoshana Zuboff, who argues that information technology can be used to either automate or "informate." Automating is the replacement of skills by machinery (deskilling). Informating refers to the erosion of the requirement for workers to execute tasks based on action-centered skills and an increase in the need for them to use mental, or "intellective," skills such as understanding and judging information.[52] This change is construed as positive; it represents an upskilling and an enrichment. Computers are the key -- they make it possible to shift the work process from action-oriented behavior, such as looking at the level of fluid in a wood pulp vat, to more abstract skills, such as judging the progress of a pulp-making process by reading numbers on a computer screen.

According to Zuboff, technology must be understood in its social context.[53] The transformation of work she identifies may result in "epistemological distress" among workers used to action-oriented behavior, whether blue-collar or white-collar. It may also result in attempts by managers or experts to retain control. The point, Zuboff argues, is that this shift is problematic for both workers and managers because it tends to dissolve the distinction.

Zuboff's approach may be a fruitful way to look at the impact of news-gathering systems. The integration of database and library systems and, perhaps, internet applications, into the professional context of newsroom work may reflect what Zuboff calls the informating capabilities of new technology. Computer Assisted Reporting and Research (CARR) is a good example. CARR hardware and software enable reporters to interact with data bases, manipulate data and determine relationships between, say, motor vehicle driving records and school bus accidents. They provide reporters a window on and a tool to manipulate large masses of information, and they are a significant source of background information, evidence and story ideas. These computer-based systems open new horizons to reporters and in so doing enhance professional skills.[54]

Another example of a technology with informating potential is the online news library.

Hansen and Ward report evidence that reporter and librarian roles are converging in newspapers,[55] an outcome that Smith predicted more than a decade and a half ago when he noted that "a kind of historical collusion is developing between journalism and librarianship."[56] News librarians once were considered low-status filers and retrievers of news clips. They have developed valuable skills in shaping and performing database searches and now are becoming part of reporting teams.

A third example is graphic design systems, which have enabled editorial artists to create and edit informational graphics as easily as others edit text. Before computerization, graphic artists had relatively low status in the newsroom. According to Roger Fidler, who founded the Knight-Ridder Graphics network, the new generation of graphic artists "tend to be actively involved with reporters and editors and take great pride in their ability to inform readers through graphics."[57]

The integration of pre-press production systems, such as pagination and perhaps digital darkrooms, into newsrooms represents a different impact. Such computer systems may have informating elements. Pagination may, for example, give a copyeditor or page designer a wide range of feedback about the pre-press production process as a whole by providing tracking information about the status of stories, ads and photos destined for a page or section. This requires the development of new skills and new strategies for interacting with data. But from the point of view of editors, the impact is neither fundamentally automating nor informating.

Zuboff says the informating capability of "the smart machine" tends to eliminate the distinction between white and blue collar work.[58] The bias that runs through her perspective is that integrating the mental and manual dimensions of work would necessarily be a positive outcome of technological change. The experience in newsrooms suggests that the outcome may be positive, negative or mixed, depending on whose job has changed and how. News production systems do, in effect, dissolve the distinction between white and blue collar, but they dissolve it by eliminating one category of worker.

News production systems have an automating effect from the perspective of production departments. But they are not predominantly informating from the perspective of the newsroom. Rather than undermine the boundaries of managerial authority, which is the outcome Zuboff suggests, they undermine the boundaries of professional discretion. Editors are adversely affected by the same process that deskills production workers, and this is not a positive outcome for either group.

Zuboff's dual constructs--automating and informating--are useful in explaining the experience of nonprofessional workers in the face of information technology. They provide insights into the impact on some classes of white-collar/managerial workers. And they might offer a blueprint for change in the nature of such work. But they fail to capture a substantial impact of information technology on professional workers in newspaper newsrooms. Studies of information technology and work have looked more thoroughly at change from the perspective of the manual or craft worker, not as thoroughly from the perspective of the intellectual worker.

Deprofessionalization

Some scholars have examined professional occupations and technological change. In the literature, there are two main approaches to explaining a decrease in the professional characteristics of an occupation -- deprofessionalization (the white-collar analogue of deskilling) and proletarianization. Technology can deprofessionalize if it makes a profession's specialized knowledge available to nonprofessionals. The profession might lose its monopoly of specialized knowledge or its ability to restrict the application of that knowledge to accredited members. Several researchers report that computer aided design (CAD) systems have this effect -- they enable technicians to take on design responsibilities that had been closely held by engineers. Others, however, argue that CAD systems can upskill design work for engineers as well.[59] A better example might be computer programs that make professional knowledge available to nonprofessionals, such as expert systems or write-your-own-will software.

Proletarianization, a Marxist concept, looks at the loss of professionalism in terms of relations of production. The principal indicator would be the degree of a profession's shift from the category of self-employed to employed and the concomitant loss of autonomy. One example might be the loss of autonomy and the increase in oversight that accompany the integration of physicians and physician groups into health care systems as employees. Computers are used to calculate professional "productivity," and compensation can be adjusted accordingly.[60]

Proletarianization is of little help in understanding technology and news work -- most newspaper journalists are employees. Deprofessionalization is a more appropriate concept. The impact of news production systems does appear to deprofessionalize editors,[61] but in a rather unusual way. After a technology such as pagination is implemented, editors retain their professional knowledge (their editing skills) as well as their monopoly in its application. What they lose is much of their discretion in applying it in the face of production imperatives.[62]

Technological enlargement

The experience of journalists with news production systems suggests a need for another way to explain the impact of information technology on work. A category of impact is needed that is not captured by the idea of deskilling, that is neither automating nor informating, that is not deprofessionalizing through loss of exclusivity. It would explain an outcome in which professional work becomes more specialized yet less flexible. Professional work is degraded through the addition of skills, through reintegration of conception and execution, through the redefinition of production tasks as journalism.

Job "enlargement," a concept taken from industrial relations and the sociology of work, is perhaps the closest fit. On the assembly line, the classic case of enlargement is a speedup -- an assembly line worker is required to perform four tasks rather than three in a given amount of time. The result often is diminished quality, because workers cannot pay as much attention to each task. Perhaps the concept can be stretched a bit. Traditional job enlargement for an editor might mean having to edit 20 stories instead of 15 in a shift. The shift of production work into the newsroom adds tasks of a different order. They are not as intellectual as traditional editing tasks[63] -- yet they often must take priority if the paper is to be published.[64] Editors retain their exclusive control over the intellectual tasks that editing encompasses, but they lose discretion over the emphasis they can place on those tasks. Another analytical category is needed to explain this phenomenon, perhaps "technological enlargement" of professional work.

This is more than an academic exercise. Computers have contributed to the redefinition of journalism, but this transformation has happened "behind the backs" of journalists. It has occurred through thousands of small decisions about who is supposed to do what with which computer system in hundreds of newsrooms. And it is likely to continue as the scope of computerization continues to expand in daily newspaper newsrooms.

New tasks

Newspapers have avidly pursued such information technologies as audiotext, online newspapers and the internet in the last few years. Other computer technologies may find their way into newsrooms as well. A few newspaper executives, for example, are suggesting that newsrooms use database marketing systems to generate story ideas and provide readers with targeted reports.[65] Will database marketing, a tool typically used by advertising and marketing departments, become journalism? Another innovation, online interactivity, is already being redefined as journalism, as a glance at any recent trade journal issue will indicate. Little is known about how such innovations will affect journalists. If, for example, online newspaper subscribers expect to have speedy interactive access to reporters and editors, will journalists have to limit the time they spend on reporting and editing to respond to readers? Will interactivity provide reporters with new sources of information and expose them to perspectives they may not have considered?

Regardless how information technology tasks are defined, it is fair to ask what they have to do with journalism. Do they enhance journalistic practice or detract from it? Many of the tasks that journalists might be asked to perform with new computer systems do not have analogues in either the pre-computer newsroom or in production departments. An important question for journalists and journalism educators is whether these new tasks will have an informating impact or whether they will result in technological enlargement, as news production systems have done.

In order to ask such questions and to understand and to be able to critically examine the implementation of information technology, communications scholars need a way to explain what is happening at the level of skill and task--the human interface. A useful conceptual frame must take into account the idea that computer technologies can have vastly different impacts on different classes of professionals within the same white collar organization. Computerization isn't just about computers. It's about what specific computer systems are designed to do and how they are implemented.

The wrong question is the general one: "What impact has computerization had on news professionals?" A better question is richer with specifics: "Has a given type of computer system enhanced a journalist's professional and creative skills? Or has it limited the journalist's discretion in applying those skills?" One provisional answer, based on framing the question this way, is that computers primarily enhance news gathering, while computers both enhance and degrade news editing. The greater the degradation, which can be seen in limitations on discretion, the greater the ambivalence, and, perhaps, the greater the impact on quality of work and quality of work life?

Suggestions for research

What are the implications for journalism research?

One suggestion is to locate technology studies at the level of work -- what it is professionals do all day and how their workday changes after information technology is implemented. Important considerations are inventories and analysis of tasks, and more important, an analysis of time spent on tasks, the nature of those tasks, and changes in professional discretion in choosing which tasks to concentrate upon. In addition, technological change should be examined in terms of indicators, such as time, job satisfaction, burnout, retention, and, ultimately, journalistic quality.

Technology also should be examined at the level of organizational change. Does information technology improve or hinder efforts to make such changes? A more specific question is whether there is a correlation between the implementation of a computer system and newsroom task specialization. A working hypotheses might be that the introduction of news production systems will correlate positively with newsroom task specialization, because of the need for specialized expertise, and that the introduction of news-gathering systems will not. A related question is, What are the relationships between information technology and various approaches to newsroom "re-engineering," such as topic teams, newsroom circles, display desks and design desks? Ryan says, for example, that display desks need "wordsmiths, visual specialists and people proficient with computers" and that by working together, these specialists would learn one another's skills. "Before long," he says, "each display editor would be expected to know how to do every job."[66] If news production technology leads to greater task specialization, this outcome may be unlikely.

Have newsrooms been reorganized to solve production problems or to improve journalistic quality? If the technology's informating potential is exploited in re-engineering, the result should be an increase in employee satisfaction and better quality. If the mode of introduction is technological enlargement, the opposite should be evident.

Communications research, which has examined technological issues at the levels of audience effects and culture, has invested little time on studies of technology at the level of work.

The absence of a conceptual framework, or even the rudiments of one, has meant that there is no road map for research into a major industry trend and its often-unintended consequence -- the transformation of journalistic work. Consequently there is little basis for offering guidance and criticism to an industry pursuing greater and greater computerization.

1. David Weaver and G. Cleveland Wilhoit, The American Journalist, 1986 (Bloomington: University of Indiana Press). Also Wilhoit and Weaver, "U.S. Journalists at Work, 1971-1992," paper presented to the AEJMC Media Management and Economics Division, Atlanta, August 1994.

2. The percentage of daily newspaper journalists identified as supervisors and copyeditors has slowly increased at the expense of journalists identified as reporters. This increase continued even after the number of daily newspaper journalists peaked in 1990. Supervisors and copyeditors have substantial production responsibilities. Cornelius F. Foote Jr., "Minority, Total Newsroom Employment Shows Slow Growth, 1994 Survey Says," ASNE Bulletin, April/May 1994, p. 20-22.

3. John Russial, "Pagination and the Newsroom: A Question of Time," Newspaper Research Journal, 1994, 91-101; Doug Underwood, C. Anthony Giffard and Keith Stamm, "Computers and Editing: The Displacement Effect of Pagination Systems in the Newsroom," Newspaper Research Journal, Spring 1994, 116-127.

4. The relative percentage of copyeditors and supervisory editors has increased slightly in the last several years as the total daily newspaper editorial workforce has declined, according to surveys reported in the ASNE Bulletin May/June 1993 and April 1994. It is unclear how much of the relative increase in editors represents positions created to offset the impact of pagination, but it is unlikely that the increase is enough to offset a 20 percent reduction in editing staff positions. The effective loss of editing staff positions due to pagination's impact could be greater than the number of editing jobs lost through cutbacks during the last recession.

5. In a preliminary study of newsrooms and digital darkrooms, I observed photographers and photo editors at 10 newspapers performing many tasks that had been done by production workers before the introduction of AP Leaf systems and Adobe Photoshop into newsrooms.

6. John Russial, "Pagination and the Newsroom: A Question of Time."

7. John M. Shipman Jr., "Computerization and Job Satisfaction in the Newsroom: Four Factors to Consider," Newspaper Research Journal, Fall 1986, 69-80.

8. Betsy B. Cook, Steve R. Banks and Ralph J. Turner report that copyeditors have significantly higher levels of emotional exhaustion than reporters and that copyeditors who have multiple role assignments -- copyediting, layout and design -- have the lowest levels of personal accomplishment, making that type of position a high-risk job for burnout. The authors did not correlate the use of computer technology with multiple role assignments, but

it is likely that many copyeditors in that category use news production systems such as pagination. "The Effects of Work Environment on Burnout in the Newsroom," Newspaper Research Journal, 14, 3&4, Summer and Fall 1993, p. 123-134.

9. Underwood, Giffard and Stamm, "Computers and Editing."

10. Jean Ward and Kathleen A. Hansen, "Journalist and Librarian Roles, Information Technologies and Newsmaking," Journalism Quarterly 68 (Fall 1991) 491-498; Hansen et al., "Local Breaking News: Sources, Technology and News Routines, Journalism Quarterly 71 (Autumn 1994) 561-572.

11. Elliot Jaspin, "The New Investigative Journalism: Exploring Public Records by Computer," in John V. Pavlik and Everette E. Dennis eds., Demystifying Media Technology, (London: Mayfield) 1993, 142-49.

12. John Russial, "Pagination and the Newsroom: Great Expectations," dissertation, Temple University, 1989.

13. Nancy M. Carter, "Computerization as a Predominate Technology: Its Influence on the Structure of Newspaper Organizations," Academy of Management Journal, June 1984, p. 251-268.

14. Russial, "Pagination and the Newsroom: A Question of Time"; Underwood, Giffard and Stamm, "The Displacement Effect."

15. Arne L. Kalleberg et. al, "The Eclipse of Craft: The Changing face of Labor in the Newspaper Industry," in Daniel B. Cornfield, Workers, Managers and Technological Change, 1987, (New York: Plenum). Recent trade journal reports make the same point. See, for example, David M. Cole, "Pagination, Page by Page," presstime, February 1995, p. 29; Anna America, "The Power of Pagination," presstime, April 1994, p. 44-47; Julius Duscha, "The Alameda Model," presstime, April 1994, p. 48-50.

16. Anthony Smith, Goodbye Gutenberg: The Newspaper Revolution of the 1980s, (New York: Oxford), 1980, p. 132.

17. James W. Carey and John J. Quirk, "The Mythos of the Electronic Revolution," in Carey, Communication as Culture: Essays on Media and Society, (Boston: Unwin Hyman) 1989.

18. "Automation," The APME Red Book 1964, The Associated Press, 22, p. 50; Edmund Arnold, 1972, Ink on Paper, (New York: Harper & Row), p. 74.

19. Cole, "Pagination, Page by Page."

20. M.L. Stein, "Joys and Sorrows of Pagination," Editor & Publisher, Dec. 24, 1994, p. 24.

21. Cole, "Pagination, Page by Page."

22. Robert McClain, the head of a training firm that specializes in Macintosh applications for newspapers, says, "In most cases, today's graduates are far from ready to step into a paginated or partially paginated newspaper." McClain says writing, editing and design skills should be taught first, but he argues that computer page design technology "has become a tool of the trade and should be better taught by our colleges and universities." Robert McClain, "Journalism Education Should Include More Computer Training," Newspapers & Technology, January 1994, p. 21. Paul Lester of California State University, Fullerton, argues that journalism schools have to link technological concerns with a philosophy of education. Paul Lester, "Technical Convergence Equals Professional and Academic Convergence," Viewpoints, The Official Newsletter of the Visual Communications Division of AEJMC, Fall 1993, p. 8. See also John Russial, "Beyond the Basics: Mixed Messages About Pagination and Other Skills," Newspaper Research Journal, forthcoming.

23. Weaver and Wilhoit, The American Journalist, p. 154-157.

24. Judee K. Burgoon, Michael Burgoon and Charles K. Atkin, "The World of the Working Journalist," (New York: Newspaper Advertising Bureau) 1982.

25. William R. Lindley, "From Hot Type to Video Screens: Editors Evaluate New Technology," Journalism Quarterly 65(2) Summer 1988, p. 485-89.

26. See, for example, Larry D. Kurtz, "The Electronic Editor," Journal of Communication, 30, (Summer 1980, 54-57); Linda J. Shipley and James K. Gentry, "How Electronic Editing Equipment Affects Editing Performance, Journalism Quarterly, (Autumn 1981 371-74,378); Starr D. Randall, "Effect of Electronic Editing on Error Rate of Newspapers," Journalism Quarterly, (Spring 1979 161-165); Gerald F. Stone, 1987, Examining Newspapers, (Newbury Park: Sage), p. 58-59.

27. Shipman, in a review of literature on newsroom computerization and job satisfaction, points out that "computers can be used for greater control of workers and a lessening of autonomy, or they can help achieve greater decentralization and freedom in the workplace." Shipman, "Computerization and Job Satisfaction in the Newsroom."

28. Russial, "Pagination and the Newsroom: A Question of Time"

29. John Russial, "Pagination and Newsroom Organization," paper presented to the AEJMC Communications Technology and Policy and Newspaper Divisions, Atlanta, Ga., Aug. 13, 1995. Carter noted an increase in specialization in newsrooms after VDTs were introduced.

Carter, "Computerization as a Predominate Technology."

30. Underwood, Giffard & Stamm, "Computers and Editing."

31. Ward and Hansen, "Journalist and Librarian Roles"; Russial, "Pagination and Newsroom Organization;" Underwood, Giffard and Stamm, "Computers and Editing"; Eric Wolferman, "Pagination: Avoiding Frustration in the Newsroom," 87-95 in Pavlik and Dennis, Demystifying Media Technology; Roger F. Fidler, "Computer Graphics and the News," 96-98, in Pavlik and Dennis.

32. Two approaches are detailed in Beverly H. Burris, Technocracy at Work, (Albany: State University of New York), 1993, and Ian McLoughlin and Jon Clark, Technological Change at Work, 2nd edition, (Buckingham: Open University), 1994.

33. See Harry Braverman, Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century, (New York: Monthly Review Press) 1974; Harley Shaiken, Work Transformed: Automation and Labor in the Computer Age, (New York: Holt, Rinehart & Winston), 1984.

34. Sociologist Daniel Bell, computer scientist Herbert Simon and other information society, theorists argue that advanced technology benefits workers by eliminating unskilled, tedious jobs and providing in their place jobs that offer greater variation and greater opportunity for meaningful work. See Daniel Bell, 1973, The Coming of Post-Industrial Society, (New York: Basic); Herbert A. Simon, 1979, "What Computers Mean for Man and Society" in John Burke and Marshall Eakin, Technology and Change, (San Francisco: Boyd & Fraser), 68-76. Flexible specialization theorists adopt a similar view of technology and skill. See Michael Piore and Charles Sabel, The Second Industrial Divide, (New York: Basic) 1984.

35. McLoughlin and Clark, Technological Change at Work; Shoshana Zuboff, In the Age of the Smart Machine, (New York: Basic) 1988. A related approach, sociotechnical systems, is summarized in Jon Harrington, Organizational Structure and Information Technology, (New York: Prentice-Hall), 1991, p. 86-88.

36. Russial, "Pagination and the Newsroom: Great Expectations."

37. Braverman, Labor and Monopoly Capital.

38. See, for example, Shaiken, Work Transformed: Automation and Labor in the Computer Age.

39. Philip Kraft, "The Industrialization of Computer Programming," in Andrew Zimbalist, Case Studies on the Labor Process, (New York: Monthly Review) 1979.

40. See, for example, Charles Derber, ed., Professionals as Workers, 1982, (Boston: G.K. Hall).

41. Skills may, for example, have as much to do with politics and control of work as they do with craftlike competencies. See, for example, Stephen Wood, ed., The Degradation of Work? Skill, Deskilling and the Labor Process (London: Hutchinson) 1982; Wood, ed., The Transformation of Work, 1989, (London: Unwin Hyman); and Peter J. Senker, "Automation and Work in Britain," 89-110, in Paul S. Adler, ed., Technology and the Future of Work, (Oxford University: Oxford) 1992.

42. Arne L. Kalleberg et al., "The Eclipse of Craft: The Changing Face of Labor in the Newspaper Industry," 47-71 in Daniel B. Cornfield, ed., Workers, Managers and Technological Change, New York: Plenum) 1987; Cynthia Cockburn, Brothers: Male Dominance and Technological Change, (London: Pluto) 1983.

43. Marion Dearman and John Howells, "Computer Technology and the Return of the Printer-Journalist," Journalism History, Winter 1975, 133-136.

44. McLoughlin and Clark, p. 48.

45. Cited in Burris, Technocracy at Work.

46. Summarized in McLoughlin and Clark, p. 52-53 and 69.

47. Stein, "The Joys and Sorrows of Pagination," p. 24. The reference is to an English major hired by a Washington state newspaper on the basis of his ability to handle Quark Xpress, the most widely used desktop publishing software in newspapers.

48. Russial, "Pagination and Newsroom Organization."

49. Leland Ryan, "Goodbye Copy Desk, Hello, Display Desk," ASNE Bulletin, April 1991; Jane Harrigan, "Why Do So Many Editors Have Such Bad Attitudes?" Quill, March 1993; Russial, "Pagination and Newsroom Organization."

50. Russial, "Pagination and the Newsroom: A Question of Time;" Underwood, Giffard and Stamm, "Computers and Editing."

51. William S. Solomon, "Technological Change in the Workplace: The Impact of Video Display terminals on Newspaper Copy Desk Work, dissertation, University of California, Berkeley, 1985. Nancy Carter and John B. Cullen noted an increase in task specialization in newsrooms with increasing computerization, The Computerization of Newspaper Organizations, (Lanham: University Press of America) 1983.

52. Zuboff, cited in Burris, p. 149.

53. Zuboff's perspective is consistent with the sociotechnical systems approach. See Burris, Technocracy at Work.

54. Inputting data into a database can be a time-consuming task, but once it is done, the data can be used and reused.

55. Ward and Hansen, "Journalist and Librarian Roles."

56. Smith, Goodbye Gutenberg, p. 115.

57. Fidler, "Computer Graphics and the News," p. 96.

58. Zuboff, In the Age of the Smart Machine, p. 393.

59. Senker, "Automation and Work in Britain."

60. Eliot Freidson, Professionalism Reborn, (Chicago: University of Chicago) 1994, p. 131. Zuboff cites an example of information technology providing corporate headquarters with up-to-date data on production at various plants, thereby giving corporate executives a way to track the performance of plant managers. Zuboff, In the Age of the Smart Machine.

61. Whether newspaper reporters and editors are professionals is a complex question. Under federal labor laws, an employee is a professional if his or her work requires advanced knowledge or specialized instruction in a field, or if it requires creativity, originality and the exercise of discretion, and if it is predominately intellectual and varied in character. The federal government considers journalism as a quasi-profession: "Obviously the majority of reporters do work which depends primarily on intelligence, diligence and accuracy. It is the minority whose work depends primarily on invention, imagination and talent." Labor Relations Reporter, Wage and Hour Manual, Bureau of National Affairs Inc. Binder 6-A, p. 660.

Johnstone et al., in their study of American journalists, conclude that journalism is a profession in most of the senses in which the term is commonly used: "[I]t is clearly a full-time occupation; there are established training facilities for its practitioners; several professional associations for working news people are in existence (though patronage of them is rather low); there is legal sanction, of a kind, for its work territory; and formal codes of ethics have been developed." John W.C. Johnstone et. al, 1976, The News People, (Urbana: University of Illinois), p. 102.

62. Russial, "Pagination and the Newsroom: A Question of Time."

63. News production systems, it can be argued, have shifted professional work toward the manual dimension. There is a great deal of physical manipulation of a mouse and keyboard involved in

pagination and digital darkroom work. This is certainly the view from the perspective of paginators who develop repetitive stress injuries.

64. Russial, "Pagination and the Newsroom: A Question of Time."

65. Jim Rosenberg, "Targeting Marketing with Insight: Applying Artificial Intelligence to Database Marketing," Editor & Publisher, June 19, 1993, 34, 59; Larry Sackett, "Marketing Departments Are Great News Sources," Editorially Speaking, Gannett Co. newsletter, p.7.

66. Ryan, "Goodvye Copy Desk, Hello Display Desk," p. 10.

The Virtual "Newspaper of Record"

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The Virtual "Newspaper of Record"

Introduction

Newspapers as a record of the day's events and conduit for public business, in varying degrees of effectiveness, have been part of life in the United States for several hundred years.[1] Some newspapers, like the New York Times, are even referred to as newspapers of record.[2] But the expression "newspaper of record" as a specifically descriptive term is most often found in the realms of history, law and librarianship of the 20th century.

The electronic versions of these newspapers offered today are not, however, exactly like the paper-based versions in a variety of ways. This paper will review the legal and practical distinctions between electronically-delivered and paper-based versions of newspapers and then suggest ways to bridge the gap between "newspapers of record" in "virtual" space.

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[1] Commission on Freedom of the Press, A Free and Responsible Press (Chicago: University of Chicago Press, 1947) pp 20-29; Jeffery A. Smith, Printers and Press Freedom: The Ideology of Early American Journalism (New York: Oxford University Press, 1988); Richard D. Brown, Knowledge is Power: The Diffusion of Information in Early America, 1700-1865 (New York: Oxford University Press, 1989); and Leonard W. Levy, Emergence of a Free Press (New York: Oxford University Press, 1985).

[2] William David Sloan, Perspectives on Mass Communication History (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1991) p. 17; Meyer Berger, The Story of the New York Times 1851-1951 (New York: Arno Press, 1970) pp 202 & 563.

Background

Many local and state government charters designate a "newspaper of record," "official newspaper" or "legal newspaper" for posting public notices.[3] The legal notices are usually treated as classified advertisements, and paid for at either an annual rate, or a line charge which may be set by the local government or the newspaper.[4] The revenues from these public notices posted in the legal advertisement of the newspapers are an especially steady source of income for small community newspapers.[5] But even for the larger newspapers selected as the legal "newspaper of record," by a community, the contract for publishing the legal notices alone may be for hundreds of thousands of dollars. For example, in 1994 the San Francisco Examiner offered the lowest bid of $400,000, under-bidding the "newspaper of record" Independent by nearly

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[3] See, for instance, Ariz. Rev. Stat. Ann. § 41-1340 and 11-255 (1994); Fla. Stat. ch. 50.011 (1993); Kan. Stat. Ann. § 64-106 (1993); Ky. Rev. Stat. Ann. § 424 ad § 426.560 (Michie 1994); Me. Rev. Stat Ann. tit. 36, § 557-A (1993); Mich. Comp. Laws §320.1410 (1992); Minn. Stat. § 331.02 (1976); Nev. Rev. Stat. 238 (1975); N.D. Cent. Code § 46-06-01 (1993); Charter of the City of Oklahoma City Article II, Section 24 and Article IX, Section 4 (1980); Pa. Cons. Stat. tit. 45, § 101 (1994).

[4] See, for instance, Barbara Pascarell Brown, "Legal Ads Don't Bring in a Lot of Revenue, But Enough That Newspapers Still Want Them," Capital District Business Review, March 4, 1991, vol. 17, no. 47, p. 14.

[5] Robert J. Rossi, vice president for newspaper operations at Park Communications, estimates that small circulation newspapers' legal advertisements fees account for about three percent of his newspapers' gross revenues annually. (Telephone interview, November 22 and December 14, 1994.)

$200,000, in an attempt to win the guaranteed revenue of legal notices.[6]

In the early 20th century the New York Times referred to itself as a "newspaper of record" because of the indexing service and archival quality of the newspaper product it offered at that time.[7] This added value of archival paper and an indexing service provided by the New York Times was used as a part of a promotional effort for library subscriptions in the 1920s.[8]

These specific references to "newspaper of record" found in archival, historical and legal texts suggest that it may be generally agreed that the qualities of a newspaper of record might include:

(1) reliable news reports of the day,

(2) authoritative records or official notices, and

(3) archival, organized chronicle of events.

Problems

Newspapers across the country, however, are now shifting to an array of online or electronic access for subscribers to the news product.[9] Some newspapers are offering their own service, or are in partnership with national online services, as a way of providing the subscriber with a news service that is not of paper and ink delivery, but electronic.[10]

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[6] M.L. Stein, "S.F. Papers Battle Over Legal Notices Contract," Editor & Publisher, October 24, 1994, p. 32.

[7] New York Times, May 20, 1913, 10:4 and January 1, 1927, 12:3.

[8] New York Times, January 25, 1927, 21:2 and January 30, 1927, Section 8 11:1.

Coincidentally, newsprint prices have increased nearly 37 percent since 1994.[11] And because of this cost increase for the newspaper business, many companies are scaling back their print publication or reducing staff.[12] The cost of newsprint is reported to be about 20 percent of a newspaper company's annual expense budget.[13]

In fact, one publisher speculated that the paper-based print version of his 150,000 circulation daily would not exist in ten years in the same form it does today.[14] Among the more recognized daily newspapers launching online delivery to subscribers are the New York Times, the Wall Street Journal, the Washington Post, the Chicago Tribune, the Los Angeles Times, the Baltimore Sun and USA Today.

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[9] For a regularly updated list of electronic newspaper projects, send a message to majordomo@marketplace.com with "get online-news online-newspapers.list" in the body of the message.

[10] William Glaberson, "As on-line 'circulation' expands, more newspapers are making the plunge into electronic publishing," New York Times, October 10, 1994, D5.

[11] William Glaberson, "Newsprint Costs Trouble Newspapers," New York Times, February 6, 1995.

[12] Richard Ringer, "Milwaukee Papers to Merge and Publish in the Morning," New York Times, January 18, 1995.

[13] William Glaberson, "Rising Newsprint Costs Testing U.S. Newspapers," New York Times, January 16, 1995.

[14] Frank Daniels III, in Rosalind Resnick, "Newspapers on the Net," Internet World July/August 1994 (69-73), p. 71.

Many of the dozens of newspapers available to subscribers online, or by an electronic delivery system, are also "newspapers of record," either by community description or in legal terms. And yet little attention has been given to the kinds of transformation that an electronic delivery of the newspaper brings to those aspects of the paper and ink based record now referred to among scholars and governments as "newspaper of record."

Research Questions

1. How might the qualities of newspapers named "newspaper of record" change when the medium of publication is an electronic rather than paper and ink delivery?

2. And have state and local governments moved through statutory descriptions to addressed the issues that will arise with these changed qualities for "newspapers of record" as they move into an electronic delivery and storage system?

The following discussion reviews more closely the concept of "newspaper of record" in connection with the three kinds of referential frames found among librarians, historians and lawmakers, as mentioned above. The author also describes how state

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and local governments have traditionally described "newspapers of record" and concludes by suggesting some legal concerns that will need to be addressed if laws are rewritten to accommodate virtual newspapers delivered electronically.

Traditional Definitions

The important terms in the expression "newspaper of record" are "newspaper" and "record." These terms are characterized as follows in standard English dictionaries and in legal reference books. The Oxford English Dictionary defines "newspaper" as (1) a printed publication (usually daily or weekly) containing news, advertisements, correspondence, etc. and (2) the sheets of paper forming this.[15] Comparatively, Webster's defines "newspaper" as (1) a publication printed on newsprint, issued at regular and usually close intervals, esp. daily or weekly, and commonly containing news, comment, features, and advertising and (2) a single issue or copy of such a publication.[16]

"Record" is defined in the Oxford English Dictionary as (1a) a piece of evidence or information constituting an (esp. official) account of something that has occurred, been said, etc. (1b) a document preserving this, and (2) the state of being set down or preserved in writing or some other permanent form. Similarly, Webster's defines "record" as (1) to set down in writing or the like, as for the purpose of preserving evidence, and "on record", existing as a matter of public knowledge; known; existing in publication, document, file, etc.

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[15] Oxford English Dictionary, 8th Ed. (New York: Oxford University Press, 1991).

[16] Webster's New Universal Unabridged Dictionary (New York: Barnes and Noble Books, 1992).

These standard English dictionary definitions provide some relevant characteristics that might describe what both historians and librarians mean when using the expression "newspaper of record". "Publication" and "paper" are mutual terms for newspaper found in both dictionaries, and "preserving" and "writing" are mutual terms for record found in both dictionaries. It might be taken then that when archivists and historians use "newspapers of record" they are referring generally to a paper publication, which is a stable record, containing writings about events.

Black's Law Dictionary refers readers seeking "newspaper of record" on to "official newspaper." And "official newspaper" is defined as, one designated by a state or municipal legislative body, or agents empowered by them, in which the public acts, resolves, advertisements and notices are required to be published.[17] The definition of the expression "of record" is given a separate entry as, existing or remaining in or upon the appropriate records...for the purposes of constructive notice. While the Black's Law definitions are specific to legal contexts there are some shared characteristics with the standard English terms mentioned above. Specifically, terms like "publication" and "permanence" seem to be common to all the uses here reviewed.

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[17] Black's Law Dictionary, abridged 5th edition (St. Paul, Minn.: West Publishing Co., 1983).

Legal Concept of a Record[18]

The concept of a record is of central importance in statutory and case law. The index to the United States Code Annotated lists fourteen pages of references to federal statutes under the heading "records" and a legal collection of judicially constructed definitions contains nearly ninety entries under the heading "record."[19] The connotations of the concept of record are stretched further by the numerous uses of the word "record" as part of a phrase.

Black's Law Dictionary defines a record as "a memorandum public or private of what has been done" or more simply as "the act or fact of being recorded."[20] These legal definitions of "record" are similar to standard English dictionary definitions in their emphasis on preserving acts and knowledge, and transmitting acts and knowledge by making them public.

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[18] This section on the legal concept of "record" was contributed by Rebecca Pressman, a Ph.D. student at Rutgers University.

[19] United States Code Annotated: 1994 General Index (St. Paul, Minn.: West Publishing, 1994); Words and Phrases (St. Paul, Minn: West Publishing, 1962), vol. 36A, pp. 35-37.

[20] Black's Law Dictionary, 6th ed. (St. Paul, Minn: West Publishing Co., 1990).

The additional element within the legal definition is the distinction between public records and private records. The law's concern with "public records" is with public access to the workings of government; therefore statutory definitions of public records usually require a public official's involvement in the creation of the record and a connection between the creation of the record and a government function.[21] Separately, the law's concern with "private records" is with defining standards for admitting them as evidence, which involves proof of regular recordkeeping procedures rather than the format of the recordkeeping.[22]

Social Contexts

Archivists References

Librarians, who are charged with managing public knowledge, refer to information that is preserved and ordered as that which has been archived. During the past 40 years many newspapers have been photographed and stored as microforms, thought to be more permanent than newsprint, and easier to organize, maintain and access after initial storage.[23]

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[21] Andrea G. Nagel, "What are 'Records' of Agency Which Must Be Made Available Under State Freedom of Information Act," American Law Reports, 4th (1984), vol. 27, p. 680; Sigman L. Splichal and Bill Chamberlin, "The Fight for Access to Government Records Round Two: Enter the Computer," Journalism Quarterly, vol. 71, No. 3 (Autumn 1994) 550-560.

[22] Federal Rules of Evidence 803(6).

Clearly these concerns were part of the New York Times' reference to its publication early in this century when it began citing itself as the "newspaper of record".[24] The Times was the first newspaper to publish continuously, beginning in 1913, an index of subjects found in its pages, and as a result, librarians began using the expression "newspaper of record" in reference to the Times soon after the paper's index was available.[25] By 1927 the Times used the expression, too, in promotions for its rag paper edition published for the purposes of library archiving.[26] That same year the Times organized a contest around the slogan "The Value of the New York Times Index and Files as a Newspaper of Record."[27]

Though the New York Times was a traditional reference resource for libraries it is not the only daily newspaper considered to be a "must have" for reference collections. Other newspapers indexed and widely collected by libraries include the Washington Post, the Los Angeles Times, USA Today, the Wall Street Journal and the Christian Science Monitor.[28]

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[23] John Cronin, "Reference and Serial Collections," in News Media Libraries: A Management Handbook, Barbara P. Semonche, ed. (Westport, Conn.: Greenwood Press, 1993) p. 214.

[24] See, for example, New York Times, April 23, 1913, 10:3; April 25, 1913, 10:4; June 7, 1913, 10:6; October 29, 1913, 10:3 and 10:8.

[25] Linda Amster, librarian for the New York Times, in a telephone interview, November 21, 1994.

[26] New York Times, January 1, 1927, 12:3 and December 31, 1927, 28:8.

[27] New York Times, January 25, 1927, 21:2; January 30, 1927, Section 8, 11:1; May 15, 1927, 25:5; June 15, 1927, 7:5; November 7, 1927, 22:5.

Historians References

Historians have begun to look more frequently to newspapers as reliable records of the past, not because there are no errors of fact or extremes of opinion found among the pages, but because of the norms among the industry that can be used as a gauge for accurate reflection of society as a whole.[29] The references to "newspaper of record" are usually directed to papers with a certain reputation for consistent attention to accuracy and depth in reporting local as well as international news.[30] Some newspapers have a tradition of providing full texts of speeches or news conferences which the editors and reporters believe readers want in total.[31] These efforts are some trouble and expense for the newspapers, but provide readers with an opportunity to know all of what was said or talked about, without analysts' interpretation, and are thought to be a respected service from the medium.[32]

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[28] Cronin, p. 212.

[29] See, for instance, Lucy Maynard Salmon, The Newspaper and the Historian, pp 75-84, and George L. Bird and Frederic E. Merwin, The Newspaper and Society, pp 395-419; "Praises Newspapers as History Sources," New York Times, July 27, 1927, 23:2.

[30] See, for example, John C. Merrill and Harold A. Fisher, The World's Great Dailies: Profiles of 50 Newspapers (New York: Hastings House, 1980) pp 221-2; "The Kingdom and the Cabbage," Time Magazine, (August 15, 1977) p. 73; Donald Paneth, The Encyclopedia of American Journalism (New York: Facts on File Publications, 1983) p. 345(a).

For instance, in a 1974 survey among newspaper publishers conducted by Edward L. Bernays, a nationally prominent public relations counsel, the top ten daily papers were the New York Times, the Los Angeles Times, the Louisville Courier-Journal, the St. Louis Post-Dispatch, the Washington Post, the Christian Science Monitor, the Miami Herald, the Milwaukee Journal, the Wall Street Journal and Chicago Tribune. All of these papers shared the characteristics of accuracy, timeliness and regular publication of news on issues both near and far,[33] and the New York Times was specifically singled out as the "principal 'newspaper of record' in the United States."[34]

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[31] Alfred McClung Lee, The Daily Newspaper in America (New York: MacMillan Co., 1937) pp 479-491, and Edwin Emery and Henry Ladd Smith, The Press and America (New York: Prentice-Hall, 1954) p. 498.

[32] Ernest C. Hynds, American Newspapers in the 1980s (New York: Hastings House, 1980) pp 11-93.

[33] Ernest C. Hynds, pp 283-5.

[34] Hynds. p. 293.

Lawmakers References

Newspapers are referred to in a variety of legal frames. For instance newspaper articles may be used as evidence of the truth of facts as stated by witnesses when the event or occurrence was so long ago that the newspaper account would be more trustworthy than eyewitness testimony.[35] This clearly speaks to newspaper reports as records of fact.[36]

Separately, however, newspapers may be legally defined by who reads or receives the paper, that is, circulation. Since the primary purpose of the printing of legal notices is to give the widest publicity practicable, statutory law generally considers a newspaper to be of general circulation when it is primarily devoted to news of general interest to the public. The newspaper, however, need not have large numbers of readers, but rather a diversity of readership within the context of a particular community.[37]

Strictly defined for purposes of "official", "legal" or "newspaper of record", a newspaper is a publication, usually in sheet form, intended for general circulation, and published regularly at short intervals, containing intelligence of current events and news of general interest.[38] The newspaper is thought to include any and all editions with "the same editorial and general news matter, and the same general circulation," and the eligibility of qualifications for "official" or "record" selection or designation are left to the state legislatures.[39]

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[35] Daniel E. Feld, "Admissibility of Newspaper Article as Evidence of the Truth of the Facts Stated Therein," American Law Reports, 3rd., vol. 55, p.663 (1994).

[36] See also, Robert W. Jones, The Law of Journalism (Washington, D.C.: Washington Law Book Co., 1940) 279-280.

[37] Dale R. Agthe, "What Constitutes Newspaper of 'General Circulation' Within Meaning of State Statutes Requiring Publication of Official Notices and the Like in Such Newspaper," American Law Report 4th, vol. 24, p. 822 (1993).

The legal range of issues involving the expression "newspaper of record", "official newspaper" or "newspaper of general circulation" includes such particulars as reasonable page size, publication language, duration of "official" or "record" designation, proof of publication, compensation, rights, duties and liabilities of the publisher generally. Many of the statutes even speak to the designation of the printing location for newspapers -- though not to the essential qualities of "printing" -- to the extent that a newspaper may be printed outside the locality it represents if the distribution is through the local mail system.[40] So that, though the legal designation of "newspaper of record" may also be "official newspaper" or "newspaper of general circulation" the basic characteristics shared by all these expressions is relatively uniform in the state court decisions.[41] There are, however, some state and local variations that are useful to review in searching for ways of designating electronic format newspapers as "newspapers of record."

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[38] Corpus Juris Secundum (St. Paul, Minn.: West Publishing, 1950) vol. 66, p. 22.

[39] Corpus Juris Secundum § 2 & 3, pp 23-25.

[40] Corpus Juris Secundum p. 32.

State by State Review

The states' legal descriptions for "official newspaper," "newspaper of record," or "legal newspaper" differ in the details, but usually contain sections pertaining to specific characteristics that can be gathered together. The following list groups the descriptions found across the states in order to provide some indication of frequency for each characteristic.[42]

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[41] See, for example, Richards v. Gannett Satellite Information Network Inc., 21 Med.L.Rptr. 2288 (1993); Medeiros v. South Coast Newspapers, 20 Med.L.Rptr. 1451 (1992); The Whitley Whiz Inc., v. Whitley County, 19 Med.L.Rptr. 1094 (1991); Dunham v. Clayton, 19 Med.L.Rptr. 1395 (1991); The Whitley Republican v. Thomson Newspapers (Kentucky) Inc., 17 Med.L.Rptr. 1415 (1990); Ohio Ex Rel. Court Index Press Inc. v. Deters, 18 Med.L.Rptr. 1787 (1990); Community Newspapers Inc. v. West Allis, 18 Med.L.Rptr. 1614 (1990); Albia Publishing Co. v. Kloknak, 16 Med.L.Rptr. 1377 (1989); Express Publishing v. Ketchum, 16 Med.L.Rptr. 1105 (1988); North Mississippi Communications, Inc. v. DeSoto County Board of Supervisors 681 F.Supp. 1185 (1988).

[42] The following statutes, listed alphabetically by state, will serve as notation for the state-by-state section review:
Ala. Code § 6-8-40 (1994); Alaska Stat. § 9.35.140 (1994);
Ariz. Rev. Stat. § 11-255 (1994); Ark. Code Ann. § 1-3-106 (1994);

Cal. Gov. Code § 6000 (Deering 1993); Colo. Rev. Stat. § 24-70-102 (1994); Conn. Gen. Stat. § 7-157 (1992); Del. Code 9 § 2652 (1994); D.C. Code 1-202 (1994);

Fla. Stat. chs. 50.011, 163.3164, 165.031, 403.5115 (1994); Idaho Code § 50-213 (1994); Ill. Rev. Stat. ch. 100, para. 5 or Ill. Comp. Stat. § 715.5/5 (1994); Ind. Code Ann. § 5-3-1-4 (Burns 1994); Iowa Code IX, 349.2 (1993);

Kan. Stat. Ann. § 64-101 (1993); Ky. Rev. Stat. Ann. § 424.120

Frequency of publication

At least twenty-five of the state codes require the newspaper designated as official or of record publish regularly, at least once a week, on a maintained and predictable schedule.[43] And more than twenty states require that the newspaper seeking designation as the official or legal newspaper have been established and publishing regularly for some specific period of time.[44]

(Baldwin 1992); La. Rev. Stat. 43.200 (1993);

Me. Rev. Stat. tit. 1, § 601 (1994); (example) Md. Ann. Code art. 28, 2-113 (1994); Mass. Ann. Laws ch. 4, § 6 (1994); Mich. Stat. Ann. 27A.1461 or Mich. Comp. Law 600.1461 (1993);

Minn. Stat. § 331A.02 (1993); Mo. Rev. Stat. § 493.050 (1993); Mont. Code Ann. § 25-3-502 (1994);

Neb. Rev. Stat. § 25-2228 (1994); N.J. Rev. Stat. § 35:1-1, 2-1, and 10:4-8 (1993); N.M. Stat. Ann. § 14-11-2 (1994); N.Y. CLS Pub. O. art. 4, § 70-a and Gen. Const. § 60 (1994); Nev. Rev. Stat. Ann. 238.020 (1993); N.C. Gen. Stat. § 1-597 (1994); N.D. Cent. Code 46-05-01 (1993);

Ohio Rev. Code Ann. § 7.12 (Baldwin 1994); Okla. Stat. tit. 25, § 106 (1994); Or. Rev. Stat. 193.010 (1993); Pa. Cons. Stat. tit. 45, § 101 (1994); (example) R.I. Gen. Laws 45-24.4-5 (1994);

S.C. Code Ann. 15-29-80 and 15-29-100 (1993); S.D. Codified Laws Ann. 17-2-2, 17-2-13, 17-2-17 (1994); Tenn. Code Ann. 2-1-104 (1994); Tex. Tax Code Ann. 351.101 (1995);

Utah Code Ann. 59-2-919 (1994); Vt. Stat. Ann. tit. 3, § 839 (1994); Va. Code Ann. 11-37 and 9-6.14:7.1 (Michie 1994);

Wash. Rev. Code 4.28.110 and 65.16.020 (1994); W.Va. Code 59-3-1 (1994); Wis. Stat. § 985.03 (1993); Wyo. Stat. 18-3-519 (1994).

[43] Alabama, Alaska, Arkansas, California, Colorado, Delaware, Florida, Indiana, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New Mexico, Nevada, North Carolina, Oregon, Pennsylvania, Tennessee, Washington, West Virginia, Wisconsin, and Wyoming.

[44] California, Colorado, Illinois, Indiana, Kentucky, Louisiana, Michigan, Minnesota, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Washington, West Virginia, Wisconsin, and Wyoming.

Distribution

The newspaper seeking designation must also be supported to some extent by subscription, not wholly given away, as an indication of its value to a particular community as a source of information. At least eighteen states require a bona fide subscription list and set either the actual number or the percentage of total paid subscriptions, like Indiana where at least 50% of total must be paid subscriptions, or like Iowa, where the newspaper with largest number of subscribers is named. Some states, like North Dakota, require that there be at least 150 subscribers, while South Dakota requires more than 200 paid subscribers in order to be named the record newspaper.

A few states require, instead, that the newspaper be for sale to the general public. This would include newspapers dependent for circulation on distribution through coin box sales and the postal service.[45] And some states simply dictate that the newspaper already have met the requirements of and been awarded by the United States Postal Service a second-class mailing permit.[46]

Some states require, too, that the newspaper be published specifically in or carry news specifically relevant to the physical community that the newspaper seeks to represent as the official newspaper.[47] Alabama simply says that every jurisdiction must have an official newspaper.

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[45] Florida and Minnesota, for example.

[46] Alaska, Arizona, Colorado, Florida, Idaho, Indiana, Maine, Minnesota, Missouri, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Tennessee, and Washington.

Format

A few states go so far as to describe the actual format parameters for an aspiring official newspaper. These states either require a minimum number of pages[48] or the actual format size.[49] Other states, like Illinois, simply require that conventional and "generally recognized" printing processes must be used.

Content

At least ten states require that the newspaper so designated must contain primarily news, not advertising, or some percentage of news generally.[50] And some states specify the kind of language that will be acceptable in a newspaper seeking official or legal or record designation. For instance, Florida requires in some instances that the newspaper publish at least twenty-five percent of the paper in English.[51]

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[47] Alabama, Arkansas, California, Colorado, Georgia, Idaho, Iowa, Kentucky, Maine, Massachusetts, Michigan, Ohio, Minnesota, Missouri, Oklahoma, Tennessee, and West Virginia.

[48] Alaska, Illinois, Minnesota, Ohio, Oregon, Pennsylvania, Tennessee, Washington and West Virginia say the newspaper can not be fewer than four pages.

[49] Wyoming says the page may not be smaller than 10 inches by 14 inches.

[50] Alaska, California, Delaware, Illinois, Kentucky, Louisiana, Michigan, Minnesota, Pennsylvania, and Wyoming.

Newspaper Quality Changes

The newspaper industry is increasingly offering an electronic delivery system. Presstime, American Journalism Review and Quill, to name just a few professional magazines, have recently carried stories about the kinds of services and prototypes starting up or already online.[52] The articles focus on the range of services and sorts of problems the newspapers have encountered so far in either creating electronic services for subscribers or accessing electronic services that provide information to the newspapers. Most of the difficulties reported seem to cluster around the subscriber's access or interface pathways, and the sort of format presentation with which they are familiar.[53]

Though News Media and the Law regularly publishes bulletins and summaries of legal issues concerning electronic records, the concerns are usually about public access to government records, not the evolving electronic newspaper as a legal record.[54] And though scholars[55] are attending to the problems of definition of and access to electronic government records, the attention is usually about the uses and exclusions found in the federal and state versions of the Freedom of Information Act[56] or in copyright laws.[57]

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[51] Some other states with content provisions include Delaware, Maine, Michigan, Minnesota, North Dakota, Oregon, and Washington.

[52] See, for example, Walt Potter, "Let's Make A Deal," Presstime, March 1994, p. 39; Walt Potter, "The Quest for Content," Presstime, January 1994, p. 27; Kate McKenna, "The Future Is Now," American Journalism Review, October 1993, p. 17; Jamie Prime, "Money Major Factor in Electronic Age," Quill October 1994, vol. 82, no. 8, p. 27.

[53] See David Russell Thompson, "The Digital Daily: How will readers react?" presented at the AEJMC Southest Colloquium, University of Florida, Gainesville, March 1995.

Scholars are usually quick to point out that the federal FOIA does not define "record" in terms of computer technology, and await congressional passage of an improved FOIA which includes consideration of electronic records.[58] The recent federal court decision, however, about the applicability of the Federal Records

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[54] Reporters Committee for Freedom of the Press, "Access to Electronic Records: A Guide To Reporting on State and Local Government In The Computer Age," News Media and the Law, Fall 1994.

[55] See, for example, M. Ethan Katsh, The Electronic Media and the Transformation of Law (New York: Oxford University Press, 1989), and Frederick Williams and John V. Pavlik (eds.) The People's Right to Know: Media, Democracy, and the Information Highway (Hillsdale, New Jersey: Erlbaum Assoc., 1994).

[56] See, for example most recently, Sigman L. Splichal and Bill F. Chamberlin, "Fight for Access to Government Records Round Two: Enter the Computer," Journalism Quarterly (Autumn 1994) vol. 71 no. 3, p. 550.

[57] Paul Goldstein, Copyright's Highway: The Law and Lore of Copyright from Gutenberg to the Celestial Jukebox (New York: Hill and Wang, 1994); James Boyle, "Theory of Law and Information: Copyright, Spleens, Blackmail, and Insider Trading," California Law Review 80:6 (December 1992) 1414-1540.

[58] "Electronic Freedom of Information Act," S. 1782, and "Electronic Freedom of Information Act of 1994," H.R. 4917, 103d Congress, 2d Session (1994).

Act to National Security Council electronic mail communication[59] gives some hope of judicial support for FOIA demands on electronic format documents.

Journalism scholars have for more than a decade discussed and described the sorts of electronic newspapers envisioned by industry progressives. Offering news online to subscribers was suggested as a relatively obvious service since so much of the news industry's pre-press work was already an electronically networked system.[60] The apparatus for receiving and reading the electronically delivered news has been suggested as an inexpensive portable, relatively light-weight flat-panel devise,[61] though for the most part newspapers are providing subscriber services through more widely available desktop home or office personal computers that subscribers already have for other uses.[62]

As the expansion of newspapers to online services becomes more commonplace, some experiences among those at the frontline are less than reassuring about the improvements of quick news delivery.[63] Among the concerns expressed often by librarians is the ease with which errors of fact enter the data stream and wiliness with which those errors remain "virtual" facts.[64] The kinds of news problems that seem to persist and expand online are the repetition of anecdotes and source quotes used across the country that are easy and quick to get in a deadline driven industry. Errors that once could be corrected the next day in a single newspaper issue, are now found across the country as newspapers pick up tidbits online, unchecked and unverified, from one another.

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[59] Armstrong v. Executive Office of the President, 1 F.3d 1274 (D.C. Cir. 1993).

[60] Jerome Aumente, New Electronic Pathways: Videotex, Teletext and Online Databases (Beverly Hills, Calif.: Sage Publications, 1987) pp 130-148.

[61] Roger Fidler, "Newspapers in the Electronic Age," in The People's Right to Know: Media, Democracy, and the Information Highway, Frederick Williams and John V. Pavlik (eds.), (Hillsdale, N.J.: Lawrence Erlbaum, 1994), pp 25-46.

[62] "E-Papers Unscrambled," Presstime August 1993, vol. 15, no. 8, p. 18.

Changes in Characteristics

The inferred qualities of "newspapers of record" taken from the kinds of references found in librarian, historian and legal texts suggest that they are (1) relatively reliable news reports of the day, (2) carrying authoritative records or official notices and are, as records of their day, (3) stable or at least unchanged once recorded, and organized chronicles of events. These three kinds of characteristics, however, seem to change as the newspaper moves to an electronic format.

(1) For instance, the reports supplied to news organizations

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[63] See, for example,"Race for Content," Media Studies Journal, (Winter 1994) vol. 8 no.1; "Media at the Millennium," Media Studies Journal (Fall 1991) vol. 5 no.4.

[64] Christopher J. Feola, "The Nexis Nightmare," American Journalism Review July/August 1994, p.39.

and subsequently included in stories published in the day's edition of a newspaper, are sometimes hard to trace because of the ephemeral quality of electronic transmission. Reporters may file a story from distant locations, only to discover later that part of the transmission did not reach the editor before the paper's edition was published.

For subscribers unfamiliar with systems of story gathering and development, or the routines of a newsroom, the story they receive online at 4 p.m., for instance, may read like a complete article. But changes and corrections after a particular dispatch or edition that some subscribers download and read online may not find their way to the attention those particular subscribers again as he or she moves through other filed stories. Or, the subscriber, just like the editor, may be misinformed simply because the story seems clean and complete, but was in fact altered through transmission failures or software glitches at the receiver's hardware. The completeness of a particular story transmission, therefore, may seem less reliable on its face simply because of the means of delivery to the subscriber.

(2) With the possibility of these kinds of omissions in electronic transmission, the verifiability by the publisher that all subscribers received and at least had the opportunity to read official notices is obviously reduced. While the newspaper publisher of a paper-based edition could trust that all products of a particular press run or edition were identical at the time of their distribution, the electronic version may not provide the same

certainty yet.

Many of the electronic news services now offer, in fact, advertise that subscribers may tailor what they receive online to the particular interests of the subscriber so that much of the day's edition may be filtered away automatically for each electronic downloading. Since the basis of the legal parameters of "newspapers of record" often requires a "general circulation" component, that characteristic may be very difficult to meet for the newspapers shifting delivery to an electronic format for subscribers.

(3) The stability of the news reports, or records, on a printed page has alternately been of some comfort and some complaint to the families of story subjects, like the wedding announcement clipped and cherished or the businessman misrepresented and sued. The instability of a news reports in electronic form seems much more within the experience of the untutored computer user who can accidently delete or disfigure text with a single key stroke absent-mindedly tapped.

That quality of final editions, unchangeable once the presses start to roll in paper-based newspapers, seems to have no corollary in electronic newspapers. While the format and position of every day's particular edition looks and feels identical in newsprint, electronic screens and software interface unique to each subscriber's selection process, changes the format slightly to accommodate the electronic interface needs.

Characteristics Relevant to Legal Transformation

The rational on legal grounds for designating newspapers of record is to facilitate public notice and to inform citizens of government business. The statutory requirements on publication frequency and distribution clearly speak to these particular concerns. The specifications of format, which at least a quarter of the states outline, do not now allow electronic publication as an acceptable format for the designation.

This apparent dismissal of electronically formatted and delivered newspapers, however, does not preclude the necessity of addressing electronic distribution as a possible circulation or bona fide subscriber distribution barrier. However, it is this format's very characteristics of speed and ease through electronic distribution and delivery of newspaper content that could be the primary reason cited for including that format, rather than excluding it. If the weight of legal concern rests most heavily with including multiple distribution systems -- as with allowing motor route, postal and coin box -- and frequency, then electronic format could ultimately be folded into the rubric of official, legal newspaper of record designation.

Conclusion

The expression "newspaper of record" can be found in a variety of contexts that include archival, historical and legal scholarship. And though the same product is being described by the expression -- a printed publication or document, containing news and advertisements, for public knowledge -- the separate concerns of archivists, historians and lawyers do not seem to be addressed by those working in print media scholarship or by the those newspaper publishers shifting to an electronic or computer-based delivery system for their news product.

The qualities described and referred to with the expression "newspaper of record" among specialized interest groups -- librarians, historians and lawyers -- cluster specifically around:

(1) reliable news reports of the day,

(2) authoritative records or official notices, and

(3) archival, organized chronicle of events.

Little, if any, of the current literature among newspaper scholars addresses the concerns of reliability, authority or permanence with newspaper editions published online, and certainly these are issues that will determine the value of newspapers in the "virtual" contexts to which they now can be found. The necessity of defining and evaluating electronic "records" as legal government documents is already recognized,[65] but the way in which the news industry addresses the concept of a "newspaper of record" in an electronic format may determine the kind of value placed on the modern news product by subscribers who include libraries, scholars and government agencies.

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[65] See, for example, the National Archives and Records Administration (NARA), is proposing changes in their regulations concerning records management for electronic format documents, reported in the Federal Register October 17, 1994.

Universal Service and the National Information Infrastructure

A critical examination of the literature

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Abstract

This paper examines the existing literature on the topic of providing universal service to the National Information Infrastructure. The examination is built around a number of questions that must be answered in order to form coherent, socially-responsible policy. The analysis focuses on the absence of an empirical approach to these questions, proposes areas of study that would benefit from a behavioral treatment, and concludes by offering a research question with which to begin.

The convergence of the telephone, television, and traditional publishing industries represented by the creation of an electronic National Information Infrastructure, known as the NII, the Information Superhighway, or simply the Net, presents policy-makers with interesting and sometimes troublesome dilemmas. The problem originates from the disparate traditions with which these industries have been governed in the past. Ithiel de Sola Pool (1983) first outlined these traditions as non-interference (traditional publishing), scarcity (broadcast television and radio), and common-carrier (telephone).

The tradition of non-interference represents a hands-off regulatory approach to publishing. Broadcasting, on the other hand, has been subjected to a greater degree of regulation based on the reasoning that the broadcast spectrum is a limited resource whose use should be protected by the government. In the common-carrier tradition, telephone service was allowed to develop into a natural monopoly based on the argument that one company could most efficiently serve the population allowing each customer to be connected to every other customer. The fact that the Net contains aspects of traditional publishing, broadcasting, and telephony presents a regulatory dilemma for policy makers.

In addition, one of the consequences of the telephone monopoly was the emergence of the concept of universal telephone service, the idea that service should be available to everyone at a reasonable cost. In order to fund this service, a complex system of internal cross-subsidies was created, whereby customers who could afford to pay more, such as businesses, contributed to a fund to subsidize those who could not otherwise afford service, such as those in rural areas where connection costs are higher.

As telecommunications technology has evolved, the argument that a monopoly is necessary for complete interconnectivity has fallen away. The modified final judgment in the AT&T antitrust case allowed competition in the long-distance business, and several bills presently on the floor of Congress include provisions to introduce competition in the local market. This evolution in the industry has also prompted a renewed debate over the idea of universal service. Many telecommunications companies (telcos) have begun to upgrade their networks to high-bandwidth, fiber-optic technology, which allows more digitized information to flow than traditional, analog-based transmission over copper wires. The transition to fiber is nearly complete at the national, regional, and state levels. What is under debate is the local loop, also called the last mile, which is the connection from the home to the first switching station.

With a fiber-optic connection, a customer would be able to send and receive voice, video, and data simultaneously over several channels. In other words, one wire could carry an interactive television signal, a video phone call, and a computer terminal connection to a distant database all at the same time. Installing fiber optics in the local loop, known as fiber-to-the-curb (FTTC), is very expensive relative to the national and regional fiber network (Phillips 1994). The costs beg the question whether or not such an expenditure is warranted for the wealthy, much less for those who would require a subsidized connection. FTTC, of course, is not the only possible high-bandwidth connection;[1] but the debate is not focused so much on the technologies as on the services the technologies would enable. At issue is a question of whether people have a right to a high-speed connection to the Net, demanded by the interests of equity, or whether such a connection is a privilege for those who can afford it.

Several questions have been addressed in great detail in the literature, but concrete answers have remained elusive: What is the historical precedent for universal telecommunications service? How should universal service be defined? What does a cost/benefit analysis of universal service look like? How should universal service be funded? What is the role of the government in establishing universal service in a competitive system? In a regulated monopoly?

The research up to this point has remained theoretical and polemical. What is needed is an empirical approach to the question of universal telecom service in order to find answers to what problems these technologies may or may not be able to solve. The problem, of course, lies in the abstract nature of the question itself. Researchers need to pay attention to relevant issues that may be operationalized in order to evaluate the merits of implementing or not implementing universal service of advanced telecom technologies. Before addressing these questions, it is first necessary to examine the theoretical arguments for and against universal service to determine what questions remain unanswered.

Historical Precedents

> The Bell system was founded on broad lines of "One System," "One Policy," "Universal Service," on the idea that no aggregation of isolated independent systems not under common control, however well built or equipped, could give the country the service. One system with a common policy, common purpose, and common action; comprehensive, universal, interdependent, intercommunicating like the highway system of the country, extending from every door to every other door, affording electrical communication of every kind, from every one at every place to every one at every other place. (Dordick 1990, quoting Theodore Vail in the 1910 AT&T annual report)

This often-quoted passage by Theodore Vail, former president of AT&T, has been cited as the origin of the concept of universal telecom service as a fundamental right. Herbert S. Dordick has argued that policy-makers should endorse universal service based on historical precedent. According to Dordick, it is important to examine how the telephone became a corporate tradition at AT&T and a perceived consumer right in the US. When Vail originally joined the Bell system in 1885, he sought to extend phone service universally, but his concept of "universal" was of "everywhere" not "everyone." By working to achieve the interconnection of the local exchanges, which allowed the provision of long distance service, Vail recognized that the "seeds of a broader concept of 'universal service' were planted" (Dordick 1990).

By 1910, the concept evolved to mean everyone, not just everywhere. Susan G. Hadden and Edward Lenert (1995) point out that Vail's concept of widespread telephone access at reasonable rates had become accepted public policy by the time the 1934 Communications Act was passed which calls for regulation "to make, so far as possible, to all peoples of the United States a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charge" (cited in Hadden and Lenert 1995). Dordick concludes that regulators must develop policies that will permit the development of broadband digital services while maintaining Vail's goal of universal service and the tradition established in US policy.

Harmeet Sawhney (1994) takes a somewhat different approach. He argues that the repertoire of experience is a useful resource in that society has been faced with the problem of providing a service to all its citizens in the past, namely telephones, education, and suffrage. According to Sawhney, universal service will result from the "overlapping consensus" of unlikely groups. Universal telephone service, for example, emerged not from any sort of benign good will but rather from fierce competition and the drive to gobble up territory, followed by Theodore Vail's move to eliminate competition and establish a regulated monopoly.

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[1] For a comparison table of high-speed, local-loop technologies, see Appendix 1.

Universal education, likewise, emerged from a desire to unify the country and "Americanize" the growing immigrant population, not from any enlightened vision. Sawhney argues that universal service is an incremental process, illustrated by the development of universal suffrage in which certain groups were given the right to vote often so that a certain group or individual could retain or win power, not as an extension of a right. When one section of the country loosened its restrictions, pressure came to bear on other parts of the country to do the same. Universal Net service, likewise, will be an incremental process driven by the competition of companies to claim territory and be the first to offer service in a given area (Sawhney 1994).

According to Dordick, history tells us that policy-makers should make universal telecom service a priority because past policy has generated a perceived human right to such service. According to Sawhney, history tells us that universal service will emerge from natural processes of competition as an unexpected by-product requiring no special government interference. One question that neither author has addressed is whether there are any inherent differences between the new technologies and the examples each has used for illustration. How appropriate is each example for illumination of current issues? The example of the telephone seems like a good start, but broadband communications systems built around the convergence of mulitple technologies offer much more than point-to-point connection of voice lines. Universal education and universal suffrage, however, cannot be taken as appropriate precedents at face value. In order to answer these questions, it is first necessary to analyze what is meant by universal advanced telecommunications service – what and who are included? what and who are excluded?

Defining Universal Service

The debate over how universal service should be defined turns to a great extent on what services will be available over the network. At present there are three models that could emerge (Mills 1994b). The first is an entertainment-based model in which the principal services include video dial tone (VDT, essentially a video telephone), video on demand (VOD, a sort of on-line Blockbuster Video), a glorified Home Shopping Network, and other consumer-driven services designed to make spending money as easy as a phone call. The second possibility is a public-interest/educational-based model in which the principal services include distance learning projects, government information access, telecommuting or work-at-home arrangements, and other information-retrieval projects designed to increase the flow of educational and public information. The third possibility is some combination of the first two models.[2]

Steven Titch (1993) has, perhaps, summarized objections to subsidized provision of universal service in the first model most succinctly:

> Now, as convergence begins to shake out, and we see Bell Atlantic teaming with Tele-Communications, Inc. and BellSouth raising hundreds of millions for a piece of the Paramount action, it's clear that even the Bell regional holding companies know that entertainment, not the information services they touted in the past, will drive broadband services on the consumer level. Given this fact, it is questionable to what extent, how much, if any, residential broadband access should be subsidized.

Titch argues that policy makers should subtly re-focus the goal in order to avert the creation of a class of information-poor. The idea that part of the nation, i.e. the wealthy, would be wired with advanced systems while the rest of the nation would be left behind has been a frequently-voiced argument in support of universal service. This argument rests on the assumption that there are certain benefits, economic and otherwise, to having access to these technologies that would give those who are connected an unfair advantage over those who are not. According to Titch, these disparities can be avoided not by ensuring universal access to broadband, but by ensuring universal access to the benefits of broadband.

Following a similar argument, Heather Hudson (1994b) suggests that a multilevel definition of universal service is acceptable because not all services are required by households. Some may serve the needs of all just fine at the community or institutional level. She suggests that what is needed at the household level (level 1) is service sufficient for voice, data, and fax at transmission speeds no more than 9600 bits per second (bps). For levels 2 and 3, she suggests Internet access and broadband applications.

John Browning (1994a, 1994b) argues universal service is an outdated concept because there are more types of information (voice, video, data) flowing over more types of channels (wires, fiber optics, and airwaves) to more than one standard receiver and because "intelligence is fast migrating to computers on the network's periphery – and many of those computers are owned by customers rather than service providers." He suggests that the idea of universal service should be scrapped for open access, which would require big network operators to make available to everybody, on a non-discriminatory basis, whatever services they do provide as well as the technologies required for the use of the services.

Susan Hadden (1994c), Chairman of the Policy Committee of the Alliance for Public Technology (APT), argued before the Senate Committee on Commerce, Science, and Transportation that the goals for universal service should not be stated in terms of specific technologies, because technologies change, but rather in terms of capabilities and functions. Her testimony provides eight such goals.

- connectivity – full capabilities of the network should reach everyone
- switching and broad bandwidth – capability of carrying two-way voice, data, video, and graphic signals[3]
- openness – users can send as well as receive and can tailor their searches for information to their own needs
- interoperability – compatibility between systems
- accessibility – ability to use the network, regardless of disability or functional limitation
- usability – ease of finding information
- privacy, security, and reliability

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[2] In "Contrasting Models: Two states blaze trails on the high-tech frontier," Mike Mills examines the experiments of North Carolina and California, the former following the public-access model and the latter following the entertainment model.

[3] "The debate about universal service has been reopened precisely because it is feasible to offer these features, and a consensus seems to be emerging that they are also desirable" (Hadden 1994c).

- essential information services – e.g., personalized health care and job training

Hudson (1994a) echoes the argument that the goal for universal service should be stated in terms of capabilities although she does not go as far as the APT in her support for ensuring access at the household level to the more advanced services.

Sawhney (1994), however, argues that the current emphasis on the development of a new definition for universal service is a misdirected effort because it is so unlikely that a definition could ever be formulated that will be acceptable to everybody. "Even if it is possible to forge a universally acceptable definition, it will have limited utility in the political arena, because the players are likely to pursue their own private interests in spite of their public support for the new definition of universal service."

In short, questions remain unanswered regarding the structure of the NII so deciding what services should be made available to all may prove to be impossible until the make-up of the system is more concrete. Although Hudson argues that goals should be stated in terms of capabilities, not technologies, in one source, she contradicts herself by specifying a technologically-specific data transmission rate in another source. Another problem with Hudson's argument is the fact that she does not recognize that the data transmission rate she specifies as appropriate for the household level is more than sufficient for most information available on the Internet, which she reserves for the community or institutional level.

The APT stands by its belief that supporting universal service is the only way to avoid the creation of an information poor. There is no empirical evidence, however, to support or to refute this argument. More importantly, there is no evidence to indicate what difference being "information poor" may make nor whether the services in question might help to solve the problem, if one exists. Before answering questions about the structure of the system, it is first necessary to answer questions about the costs and benefits of an electronic infrastructure. Steven Titch (1993) suggests that the telcos should be asking, "What are the social benefits of an information highway? What services are necessary to growth and learning? What applications can the public sector encourage?" Also, does the net provide tangible benefits to those with access? If so, how? How much access is required to take advantage of these benefits?

The Bottom Line

The discourse on costs and benefits of universal telecom service takes place on three levels: that of the individual, in the welfare and rights issues as well as consumer issues; the community level, on the benefits to the business economy and the polity; and the humanitarian level, in quasi-religious themes emphasizing the capacity for technology to bring peoples together in natural harmony (Sawhney 1994). By examining the arguments on each level, it is possible to determine what questions remain unanswered and where an empirical investigation of these issues may begin.

Sawhney (1994) argues that, at the humanitarian level, the hope is to facilitate the union of humankind. This argument stems from the fact that the root of the words "communication" and "communion" is *communis*, a shared participation in a common experience with strong religious overtones. The meaning was later extended to include the exchange of information and materials and then the technologies which made the exchange possible. Originally the connotation was a "hope for oneness with God," but the meaning has become more mechanistic. This hope for oneness has lingered on to become a recurring theme in the discussions on new communication technologies. "Within this context, the communication technologies, both telecommunication and transportation, are viewed as the physical links that make the communion possible." Obviously, the problem with this argument is that it is impossible to quantify in any way. Determining the cost or the benefits to society in tangible terms is necessarily one objective of policy makers. Arguments that fail to address these issues specifically, however moving the notion may be spiritually, often fall on deaf ears. This problem with quantification occurs within the arguments on the community level as well.

Hudson (1994a) has identified four major national goals of the US government: (1) a strong and diversified economy, (2) universal access to quality health care and education, (3) the opportunity for all Americans to develop their talents, and (4) protection of the environment. Although these goals may be debatable, the purpose is not to question them here. She argues that research, without specifying exactly which research, shows how information and telecom technologies can help reach these goals by identifying the necessary components of an information-based society: a citizenry who seeks out information rather than passively consuming it, industries that view information as a key to their competitive strategy, public and non-profit organizations that use communication technology to improve equal access to their services, and policies designed to overcome barriers to opportunity.

These components touch on issues related both to the benefits to the business economy and to the more efficient operation of democratic processes. Universal service is viewed as a way to allow the whole system, economic and political, to function more efficiently. The network externalities argument says that each additional subscriber increases the value of the entire network because each of the other subscribers can now access the newest. Extending the service to all, therefore, is likely to be more beneficial than costly.

This same argument has been used in the debate over other universal services to justify the financial expenditure. Universal services are seen as a magical solution to social reform as in the case of universal education to end poverty and social unrest and rural electrification to improve the quality of rural life and stem the flow of people to the cities. Following this argument, the Net is viewed as the vehicle into the information age with increased economic activity and more cost-efficient education and medical services. "...[T]he tax for universal service is not a levy on the rich for the benefit of the poor. It is the cost borne by society for its own benefit" (Sawhney 1994).

Hadden and Lenert (1995) argue that the concept of universal service is closely linked to the public nature of the network. Essentially, their argument becomes a chicken-and-egg question: universal service is inherently public because it is transmitted via a switched and wired network, and using this network for universal service enhances the public character of the network. Universal service, therefore is inherently public and enhances public values.

Hadden and Lenert mistakenly discuss universal service as if it is a thing, a product, instead of a service. Technology does not support universal service. Universal service is the providing of access to technology to everyone. Yes, universal service is inherently public, but the public nature of a technology that is available to all is embedded only in the fact that it is available to all. Otherwise, a certain technology would have no inherently public aspect.

Hadden (1994c) outlines the benefits of universal service as more efficient government services, improved health care, improved education, improved lifestyles, telecommuting, more efficient courts, more efficient markets, and increased First Amendment rights. The opportunity costs, the costs of not providing universal service, are the diminished size of the market, a marginalized population, and a failure to meet national goals in education and health. "Taking all these arguments together, we can see that the benefits of ensuring that everyone has switched broadband telecommunications services in the home far outweigh the costs." She concludes also that the costs of creating a population of information poor by not providing universal service are "too great for our nation to bear."

In spite of Hadden's conclusions that the benefits to the community "far outweigh the costs," the math is, quite simply, a bit more complex. Measuring the costs of implementing the technology to make universal service possible is easy, and the costs are very high. Measuring the benefits to society and the opportunity costs , however, is very difficult, if not impossible. The lists that Hadden provides *seem* to make sense when viewed abstractly, but theoretical assumptions and cost/benefit conclusions are entirely different matters.

Measuring the opportunity costs is not necessarily a problem inherent to the provision of universal services in general. In the case of universal medical coverage for example, the lack of such a service for patients who cannot afford a regular doctor leads to more expensive emergency care that is paid for by higher medical bills for those who can pay, as Sawhney (1994) demonstrates. Perhaps these costs to the community can be quantified in the case of universal telecom services, at least in relative terms if not more specific amounts. In order to make these determinations at the community level, however, it is necessary to determine the relative costs and benefits to the individual.

On the level of the individual, there are basically two concepts that are important to understanding the discourse: the individual as a consumer and the individual as a citizen. In the former, the question is how does access to advanced telecom technologies affect the market efficiency and behavior of a person. For the latter, the question is how does access affect the ability of a person to participate in the political process and how does access affect the ability of a person to get information from the government relevant to his or her needs.[4]

Embedded in the concept of the individual as a citizen is the notion of telecommunications service as a human right. If this service is accepted as a right, the cost/benefit analysis is relegated to a secondary consideration (Sawhney 1994). Tom Valovic (1994) suggests, however, that the discussion about extending universal service to advanced telecom capabilities is impractical given the slippage in universal local service in recent years: the percentage of households without phones almost doubled between 1988 and 1992 in key metropolitan areas surveyed by the FCC, and 50% of phones in the New York LATA (local access and transport area) did not have touch-tone capability as of 1991. Following this argument, the cost/benefit analysis cannot become a secondary consideration given the current fiscal situation.

Steven Meyers (1994) has summarized the situation from a human rights viewpoint by classifying four categories of "drivers" on the information highway: primes, boonies, no-knows, and forget-its. Primes are those individuals who live in urban areas with easy access to the Net and much enthusiasm for getting involved in it from an early stage. Boonies would like to get on-line, but they live in areas where access is limited. No-knows have never even heard about the Net, or they do not know what services are available, but they would probably get involved if they discovered its possibilities. Forget-its do not know about the Net, do not want to know about it, and would never have any interest whatsoever in getting on-line.

Meyers contends that there are simply some members of the citizenry who would never have any use for the electronic infrastructure. "The problem I have with universal access is the implication that the network should accommodate every potential user, regardless of the level of driving skill.... No matter how wide the road, there will always be bystanders."

This view, also known as the Aunt Sally argument, is refuted by Hadden and others at the APT (1994c). Aunt Sally is who Meyers would classify as a forget-it, but Hadden insists that Aunt Sally, and everyone else who thinks that they do not want access, is really a no-know. By explaining to Aunt Sally that she could visit her doctor without traveling to the county seat or visually check-up on her children who live two hours away, Hadden would convince Aunt Sally, and the US Senate, that the Net can benefit every individual regardless of location or socio-economic status and that every individual has a right to this service.

These arguments, however, assume that the information infrastructure will take on the form previously referred to as the public-interest, or educational, model. The concept of the individual as a consumer assumes that the Net will develop in a different fashion, following the entertainment model. If the goal of service providers is purely one of market efficiency and profit seeking based on entertainment, then what rights do individuals have to VOD or affordable video games? Focusing on the individual as a consumer effectively removes the universal service debate from the human rights arena and places it firmly in the hands of accountants.

Given the strong and growing presence of educators and researchers on the Net at present time, it is unlikely that the system will develop along a purely entertainment-based model. This statement is not meant to say that the commercialization of the Net is unlikely; the current hands-off approach being adopted by the Clinton administration would predict that the development of the infrastructure itself will be driven by commercial interests (McChesney, *forthcoming* 1996). Development by for-profit organizations does not condemn the Net to 500 channels showing *Terminator 2*, five minutes apart. The history of the development of the radio broadcast industry demonstrates the power of commercial interests over non-profit groups, but the non-profit presence on the Net is much more established in number of participants at this point than it ever was in the radio spectrum.[5]

The cost/benefit analysis of the NII is far from complete. At the level of the community and of the individual, theory and much of the literature indicates that the benefits of extending telecom service universally *might* exceed the costs of doing so (or of not doing so), but the evidence is inconclusive. More research is needed, beginning with the individual. Does an individual increase his productivity at work as well as his level of participation in the community by gaining access to the services available on the Net? If so, how? At the level of the community, researchers might ask, does the efficiency of government improve by ensuring individual access to services via the Net? If so, how?

The Research Question, Implications, and Conclusions

From a behavioral perspective, it would be interesting and instructive to determine how participation in the democratic process is affected by access to the Net by identifying the steps involved in certain types of participation such as writing a letter, volunteering on a campaign, voting, and discussing political issues with others. After identifying these steps, the question becomes one of determining what prompts a person to take action and how Net access reduces or increases the probability that participation will occur. If Net access is found to increase the likelihood of democratic participation, how does this participation benefit society? Of what consequence is this form of participation? Upon finding positive answers to these questions, i.e. that access does increase participation resulting in a social benefit, then universal service might be accepted as a prudent policy goal for law makers.

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[4] Both of these concepts carry collectivity implications in that each is part of a kind of collectivity, e.g., consumer access may be essential to an effective "consumer society."

[5] See "The Battle for the US Airwaves, 1928-1935" by Robert W. McChesney in *Journal of Communication*, volume 40, pp. 29-57.

Since much of the debate around universal service is centered around the ability of the Net to avoid the creation of a class of information poor, a question with which to begin is what difference does "information poverty" make in the ability of a group to solve a problem. Does the amount of data, i.e., unrefined information, amke a difference? What about the problem of "information overload?" Is there a point at which more information becomes essentially "noise," hindering the problem-solving process?

If universal service is accepted as a goal, the next question becomes one of its funding. In this debate, there are essentially two questions: who pays, and who gets paid? As Browning (1994a, 1994b) points out, a system cannot label the "have-nots" without labeling the "haves." Dean Miller (1994) contends that the problem is not whether universal service of advanced telecom applications is a worthy goal. The problem is that the goal of universal service has been traditionally pursued through regulated monopolies. There is near universal consensus, however, that increased competition in the telecom business will lead to enhanced benefits for consumers.

Although there is near universal consensus on the benefits of competition, agreement is not complete. Barbara J. Farrah and Mike D. Maxwell (1991, 1992a, 1992b, 1992c) argue that the telecom industry is in the midst of a transition from a technology paradigm to a market paradigm, in which there is a greater emphasis on developing applications that blend capabilities with the market's needs rather than developing products that blend technology with market technology. This argument, echoed in part by David Rand Irvin (1993), is based on the idea that the industry has previously operated under a set of incorrect assumptions that America's declining ability to compete is connected to declining technology. By breaking up the monopolies and stimulating competition, policy makers will stimulate the production of technology needed to become global competitors. The US is not being beaten by better technology; the US is being beaten by better applications of technology developed in the US. The key to US success is an end to the system of regulated competition, dissolution of the modified final judgment, and establishment of a new regulatory structure for issues related to the Net.

Given current anti-monopoly sentiment, the action Farrah and Maxwell propose is highly unlikely at this point even though they make a strong argument. If a regulated monopoly does develop around the Net in the future, it is more likely to result from the incremental process described by Sawhney (1994), mirroring the development of the telephone monopoly.

In a survey of CEOs of major industries involved in the creation of the Net, consensus emerged that one of several obstacles to the creation of the National Information Infrastructure was the lack of innovative funding mechanisms (Pelton 1994). Hadden (1994c) outlined several possibilities: (1) a NetTrans Account, a sort of value-added tax developed by Eli Noam (see Noam 1994a); (2) a tax on all equipment used on the NII, proposed by Michael Einhorn; (3) a universal service trust fund in which each user pays a small amount on his or her monthly bill; (4) a gross receipts tax, as used in Maryland; and (5) moving the spectrum allocation auction fund to serve as a nucleus for universal service. As the situation is today, universal local service of POTS is slipping, and the system of cross-subsidies is proving insufficient with the changes in regulatory structure. Creating a financing structure for implementing universal service to the Net could well prove to be the most challenging aspect to the problem.

While the US debates these issues, other governments are moving forward with plans to implement policy. Naqi Jaffery (1994) points to the greater authority of the Canadian government than of the US government to shape the nation's telecom policy. In March of 1994, the Canadian government announced plans to establish an advisory council to help formulate and implement the national network, guided by three policy objectives: "to create jobs through innovation and investment in Canada, to reinforce Canadian sovereignty and cultural identity, and to ensure universal access at reasonable costs."

Given the economic situation in the US and worldwide, the huge expense necessary to create the infrastructure to support the Net may not be justified unless tangible benefits to society can be identified. A program of empirical research might give as much attention to "community rights" as "individual rights" by examining how benefits to the individual manifest themselves in the collectivity. With such an approach, theory may be supported by evidence rather than supposition.

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APPENDIX 1
HIGH-SPEED LOCAL LOOP TECHNOLOGIES

Transmission System	Media Configuration	Performance Capabilities	Key Cost and Time to Market Issues	Leading Industry Players
Asymmetric Digital Subscriber Line (ADSL)	**Twisted pair from the central office to the home (existing local loop)**	**1.544-2 Mbps VOD and POTs today. 3 Mbps in mid-1995, 6 Mbps in late 1995. Live broadcast in 1995.**	**Uses existing cable plant for low-cost, incremental market entry. Requires ADSL digital set-top box and ADSL electronics in central office ($400-$600 per line in volume production).**	**AT&T Paradyne, Amati Corp., Bell Atlantic, Goldstar, NEC, Westell International.**
Hybrid Fiber/Coax (HFC)	Star configuration. Fiber from the switch to optical distribution node, coax to the home.	750 Mhz of services spectrum for 100 channels of analog NTSC video. Optional digital channels for compressed video, POTs, or data services.	For telcos, HFC requires significant initial investment for new cable plant and long-term build-out. Costs to $500 -$1K to pass home and $1K-$2K per subscriber based on the take rate.	ADC Telecommunications, Ameritech, AT&T Network Systems/Antec, First Pacific Networks, Ericsson/Raynet.
Fiber to the Curb (FTTC)	Fiber from the switch to the home.	Highest bandwidth option capable of 155 Mbps bandwidth to and from the home.	End-to-end fiber is the most expensive cable plant upgrade, typically $1K-$2K to pass each home. Requires longest time to deploy. Supports few subscribers per optical pedestal (8 to 12).	BroadBand Technologies, NYNEX.
Direct Broadcast Satellite	Ku Band.	Broadcast only applications.	Satellite deployment. Reaches areas too impractical or expensive to wire.	Hughes Network Systems.
Local Multipoint Distribution System	28 Ghz microwave and microcell architechture.	Primarily broadcast. Interactive services planned.	Practical in high-density areas that are difficult or expensive to wire (parts of New York City).	Bell Atlantic, CellularVision.

From "Broadband in the Local Loop" by Barry W. Phillips in *Telecommunications*, November 1994, p.38

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The Role of Private Philanthropic Foundations in Communications Policy Making

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The Role of Private Philanthropic Foundations in Communications Policy Making

Most accounts of the public policy processes do not systematically analyze the substantial role of private philanthropic foundations[1]. In fact, it appears that most in and out of the foundation world are not conscious of the often deliberate political role a significant number of foundations carry out through their trustees, staff and recipients (Colwell, 1993). Particularly, there appears to be little comprehensive research on the role of foundations with regards to communications and information technology. As the debates about the structures and development of communications systems have risen on policy makers' agenda, due to their increasing economic, political and cultural importance (Haight, 1983) a careful analysis of the role of foundations in the decision making process in communications policy is called for.

The goal of this paper is to help us understand better the process of communications policy making in the United States by focusing on the role of private philanthropic foundations, an often neglected, nevertheless as the evidence suggests, a critical actor in the public policy process. The common notion of public policy suggests that public policy is what the government does. However, Nadel (1975) and Lindblom (1980), point out that a significant amount of public policy is made "by corporations and other private governments" by directly affecting citizens' lives and "without having to go through formal government authority"(Nadel, 1975:32). While the central role of corporate public policy making in people's lives must be emphasized, the role of third sector institutions, such as private philanthropic foundations must become more of a focus in the analysis of public policy. While privately made public policy by corporations to a large extent affects people's lives directly, foundations' privately made public policy appears to indirectly affect people's lives by significantly shaping the politics of knowledge and thus both private and government policy making. This paper argues that foundations appear to be important actors in the public policy process, which makes the study of foundations and their particular impact on communications policy an important scholarly topic for further investigation.

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[1] Philanthropic foundation, as defined by the Foundation Center, an information service affiliated with the Council on Foundations, is a "non-governmental, non-profit organization, with funds and program managed by its own trustees or directors, established to maintain or aid social, educational, charitable, religious, or other activities serving the common welfare" primarily through making grants(Lewis, 1971).

Commonly the analysis of policy making separates the process into its components steps and analyzes each step in turn (Lindblom, 1980). One studies first how policy problems arise and appear on the agenda of government decision makers, then how people formulate issues for action, next how legislative or other action follows, how administrators subsequently implement the policy, and finally at the end of the process, how policy is evaluated (Lindblom, 1980). In such a step-by-step analysis of policy making, one should keep in mind, however, that there are universal issues and phenomena beyond the particular aspects of policy making unique to each step. Most notably, (Lindblom, 1980:4) policy making is an untidy, extremely complex process, a process shaped to different degrees by different actors with different resources which exert control, influence, or power over each other which produce outcomes called "policies." These outcomes are rarely based on analysis, but mostly determined by politics. That "the competition of ideas" which ostensibly characterizes a democracy (Lindblom, 1980) is in fact a "politics of ideas" where competition is unequal, should become more clear when one studies the role of foundations in public policy making.

It is the goal of this paper to argue for the importance of assessing the changing meaning of the definition of the "public interest" in information technology policy making by private philanthropic foundations, of tracking and analyzing foundation funding patterns as they relate to communications policy making, of analyzing additional means foundations use to influence the public policy making process such as through informal channels of communication, and eventually of assessing foundations' impact on communications policy outcomes. Conclusions drawn from such a study should help us understand better what the role of foundations as knowledgeable actors in communications policy making has been, specifically the role of foundations in shaping and defining the "public interest" in past struggles over new and evolving information technologies, and should inform our understanding of future communications policy making.

The study of the role of foundations in communications policy as opposed to other policy areas is particularly important as it critically adds to our understanding of the interplay between economic and informational or ideological resources, and hence the extension of power and domination in advanced industrial societies. An OTA (1991) report summarizes the importance of communications and thus the importance of communications policy: "The communications infrastructure is both nested in and sustains the larger social system of which it is a part. For communication is the basis for all human interaction and one of the means of establishing and organizing society. Communications is the process by which all social activity is conducted; without it a society could not survive." Beniger (1986) points to the growing importance of information technologies in the information economy and has emphasized the convergence of all information technologies - mass media, telecommunications, and computing - into a single infrastructure of control in the information society. The various message production techniques of information technologies shape the beliefs and behaviors through the quantity and quality of knowledge available to the public (Gerbner, 1984), and indeed also policy actors. Thus, the primary focus on the communications policy process is warranted as its outcome not only affects the struggle over other policy issues, but because more generally, the outcome will determine the negotiation and distribution of economic, political and cultural power.

Buxton's (1994) historical account of Rockefeller philanthropy's involvement in early communications research and policy might serve to summarize much of foundations' activities in this field. The Foundation's goal during the 1930s was to find a place for educational radio programming within the primarily commercial framework that had been consolidated under the 1934

Communications Act. Rejecting calls for developing a vigorous and autonomous network of educational broadcasters, it sought instead to transform particular educational broadcasters by drawing on the resources of their commercial counterparts. Rockefeller's efforts and resources were directed toward the private broadcasting sector. Above all, it sought to find ways of convincing private broadcasters that educational programming could have an appeal to their audiences. Buxton concludes that Rockefeller philanthropy was able to deploy social scientific knowledge to redefine the public policy framework, thereby pursuing their private interests more effectively. "While these interests were couched in terms of public service, it was assumed that the public could best be served by a capitalist system of ownership and control" (p. 170). The tendency not to challenge the existing communications structure, (i.e. a market economy), but rather to try to reform it, appears to be a characteristic that describes well foundations subsequent involvement in communications policy. Whether this is indeed so and how foundations' understanding of public policy objectives affected public policy making needs to be investigated.

In the late 1960s foundations were not concerned to confront issues of power in society, according to Kramer (1977). The author argues that in the past the major foundations' definition of public needs in the broadcasting area was based on traditional patterns of private philanthropy: foundations were not concerned with the "fundamental premises of power in society as they are reflected in the media"(1977:1325), but they were concerned with support for education and cultural institutions. Where foundations in the 1960s and '70s addressed issues of control and power over and through the media they did so "almost never as a part of a communications program"(1977: 1323), but from programs dealing with social reform or civil rights issues. For reasons that need to be explored in another study, foundations were influenced by some critical shifts in the perception of foundations' roles in society. Subsequently, foundations began to increasingly recognize the relevance of communications policy and became more involved in this field. Thus foundations have gone through a change in their understanding of the issue and its relevance to them. This change in attitude and foundations' subsequent impact on public policy is important to understand.

Considering the role of foundations in communications public policy making from an agenda setting perspective, foundations appear to be critical actors. Hilgartner and Bosk (1988) reject the theory that social problems are objective and identifiable societal conditions that have intrinsically harmful effects. They agree with Blumler (1971) who argues instead that a "social problem exists primarily in terms of how it is defined and conceived in society"(p.300). Research on agenda setting and framing suggest that the stage of issue formulation, where foundations appear to be particularly active, as I will show later, is a especially significant stage. According to Hilgartner and Bosk(1988) "which 'reality' comes to dominate public discourse has profound implications for the future of the social problem, for the interest groups involved, and for policy" (p.58). Competition among social problems occurs simultaneously on two levels: first, within an issue area, different ways of framing an issue may compete to be accepted as an authoritative version of reality, and secondly, there is competition for public attention between issue areas. The "frame" of an issue suggests what the issue is about, it answers the question, what is the basic source of controversy or concern on this issue (Gamson, 1988). Without distorting or suppressing information, merely by the framing of outcomes and contingencies, decisions can be influenced (Kahnemann and Tversky, 1986). Foundations, I suggest, are involved on both levels of the issue generation process: the framing process is shaped in the way in which foundations identify and define social problems and issues like the "public interest," and in the competition for attention through their allocation of resources, either through their funding decisions or through their ability to communicate the importance of an issue and its particular frame to relevant policy decision makers.

In their public arenas model Hilgartner and Bosk (1988) emphasize the importance of the linkages between the different public arenas shaping public agendas and the public policy process. The authors point to the "patterns of interaction among the different arenas...through which activities in each arena are spread throughout the others" and the "networks of operatives who promote and attempt to control particular problems and whose channels of communications crisscross the different arenas"(1988:56). One can suggest that foundations' resources include their ease of access to relevant decision makers (Cobb and Elder, 1983) and ability to communicate and use these communications links to shape the public policy debate. This process is not well understood.

A good starting point to understand the role of philanthropic foundations in communications policy making, is an analysis of the process by which foundations define the meaning of the "public interest." The much used, rarely defined and variously interpreted term of the "public interest" has been brought forward in policy debates surrounding various communications technologies and its meaning has changed and evolved over the years. As authors like Polic and Gandy (1993) and Haight(1979) have argued, there has been a significant shift among policy makers in the rationale of how best to serve the common good through communications policy making. This shift has been characterized by a displacement in the 1980s of the public interest standard as expressed in the public trusteeship model for broadcasting by a marketplace standard, characterized by deregulation and the marketplace agency model (Polic and Gandy, 1993). Polic and Gandy (1993) point out that "both public trusteeship model and the marketplace agency model incorporate the idea of the public interest"(p. 226). The public trusteeship model emphasizes the *normative* ideal of the *"public interest"* which "strives towards realization of the ultimate goal of the 'multiplicity of ideas' that is understood as the true expression of the workings of democracy"(p. 225). The market place agency model of the *"public's interest* " emphasizes the *empirical* construct of the interest of a concrete public in real time and space.

McQuail (1992) has developed different concepts of the public interest based on a typology by Held (1970) beginning with the preponderance model followed by the common interest model and the unitary model. The different typologies differ on one level as to the specificity of the substance or meaning of the 'public interest,' especially the degree to which they emphasize some normative ideal where the public interest are those interests which all members are presumed to have in common (unitary model). Secondly, they differ as to the means of determining the public interest. The preponderance theory, for example, defines the public interest in a majoritarian way, whereas the common interest theory, according to McQuail(1992), refers to experts or tradition rather than to majoritarian decision making as a good means of arriving at the ideal of the 'public interest.'

Similarly, Entman and Wildman (1992) argue that the communication policy debate can be divided roughly between the "market economics" and "social value" schools of thought. The "market economics" school advocates competition and efficiency and the market mechanism or majoritarian (consumer) decision making. The "social value" school associates problems with the market process and sees governmental intervention as at times beneficial. The social value school represents the "normative ideal" perspective of the "public interest." Both schools, according to Entman and Wildman (1992), espouse diversity, "a metaphorical marketplace of ideas," as a goal of communications policy. Where the difference between the two schools lies is in their frameworks for understanding diversity: product, idea, or access diversity. Whereas the "market economics" school argues that product and similarly access diversity will accomplish idea diversity the "social value" school argues that competition and efficiency will not necessarily perform well with regards to other social objectives. For them product diversity will not yield necessarily sufficient idea diversity. The different interpretations of diversity and how to achieve it reflect the larger policy debate over the meaning and means of achieving the 'public interest.' Thus, these different understandings of diversity, might help us identify the shifting definitions of the 'public interest' in communications policy making in general.

The shift toward a legitimation of the marketplace agency model, eventually equated the public's interest with the interests of the communication industry (Polic and Gandy, 1993). These distinctions made here by Polic and Gandy (1993), McQuail (1992) and Entman and Wildman (1992) help to clarify the different possible meanings of and the struggle over the interpretation of the public interest. The different concepts of the public interest could then be distinguished according to their emphasis on an abstract normative objective, the means of obtaining it (either through the market or through some other mechanism such as the government, an independent body, or some other non-market means of identifying the public interest), and their emphasis as to product or idea diversity. These concepts of the public interest, however, are rather recent and might not be very useful in analyzing the changing definition of the public interest over a longer time period, e.g. since the 1934 Communications Act. A more general approach in addition to the one above might be used in a historical analysis of the public interest definition by foundations.

Pointing out the futility of arriving at a relatively specific model of the public interest due in part to the absence of a unitary value system to which one could appeal, McQuail suggests Held's (1970) approach to the problem. Held argues that one should think in terms of competing claims: 'public interest' claims are normative assertions that something (an action or a goal) is justifiable on grounds of wider benefits, within the terms of a given political system and framework of norms. McQuail (1992) has developed a framework of principles for media assessment based on the study of communications policy debates over the previous decades. It represents the main evaluative ideas which are actually encountered in public debate and in regulations concerning media performance. Most societies recognize a wide range of 'communications goods' such as freedom, diversity, education, services to democracy etc. In general, such values are not themselves in dispute, but there can be conflict about their relative precedence and their applicability to particular circumstances. The discussion of media performance is rooted in time and place but largely coincides with the core values of modern Western society. While the particular terms are open to alternative interpretation, it is proposed that these values are:

1. freedom
2. justice/equality
3. order/solidarity

These three basic values, McQuail argues, do often come into conflict with each other and an appeal to one may be made in order to counter an appeal to another. How the tension over these values is played out over time by private philanthropic foundations should be the focus of research proposed here.

Freedom as a public communication value or principle has often been defined (as in the First Amendment of the US Constitution) in terms of an unrestricted right to publish without prior permission or license and without reprisal, aside from the normal provisions of the law, which apply to all citizens. It is a condition, rather than a criterion of performance, since freedom does not predict any specific performance outcome. Freedom should not only be defined as freedom from the government, but media in general cannot entirely escape controls and demands of other private sector agents: the pragmatic demands as well as normative expectations of their various external partners, especially those of sources, clients (audiences and advertisers), and would-be communicators. Thus, as a condition of media structure, freedom calls not only for the absence of a legally imposed licensing or censorship mechanism, but a degree of independence from the main kinds of pressures and constraints encountered in public life, i.e. in social relations other than with the government. I therefore distinguish between structural conditions, that is the legal freedom to publish, and the operating conditions, the independence from economic and political pressures and relative autonomy for journalists.

The condition of a free press or media system, as suggested by McQuail brings with it a series of benefits for society. These benefits include reliability and objectivity of the communications system as no other institution or social agents influences the media's output and as independence is a necessary condition for detachment and truthfulness. Similarly, a free communications system will lead to a robust and uninhibited press with a critical stance that can pursue its watchdog function. A free media will provide access to a diversity of knowledge as it is open to new ideas and able to provide a platform for the expression of opinions, needs and demands. Finally a free media, so its advocates, will lead to innovation and creativity.

The three values mentioned above are not entirely mutually exclusive, or rather the benefits expected from them are not. For example, one could argue that freedom promotes participation of citizens in formulating the objective and goals of society and in choosing means for achieving them. At the same time, equality could be argued to promote those objectives. Although one might object that this is somewhat arbitrary, I would categorize participation as essentially a value deriving from the equality variable since participation is only truly possible if all actors are more or less equal in their capacity to participate. Similarly, the issue of diversity could be categorized under freedom or quality. This category, I suggest, can be distinguished in terms of the context it is used in, whether it is derived from freedom or equality as a social value of the communications system and thus should be derived from freedom or equality separately.

The value of equality corresponds closely with the idea of justice (equality of rights before the law, fairness of social arrangements). The expression of grievances and processes of justice require adequate channels of communication and the means of publicity. The potential to communicate and to receive communication is a social good which should be universally and equally available. Particularly the democratic process requires the services of public channels of communication as the concept of a democratic citizenship presupposes an informed and participant body of citizens. The value of equality needs to be translated into more specific meanings to be applied to a communications system.

Equality requires that no special favor be given to power-holders and that access to media should be given on a fair, if not always an equal, basis to contenders for office and, in general, to oppositional or deviant opinions, perspectives or claims. Equal access for senders to the communications system can be based on the principle of open/equal access, that is equal air time for, e.g. all political contenders; or it could be based on the principle of fair/proportional or 'appropriate' allocation of access based on proportional representation of political support or demand.

The value of equality also supports policies of universal provision in broadcasting and telecommunications and of sharing out of the costs of basic services. Thus equality calls for an absence of discrimination or bias in the amount and kind of access available to senders or receivers, in spite of economic differences of the citizens, as far as is practical.

What is practical then, leads to distinctions within the value of equality in terms of how far one is willing to push that value. Some advocates might support the notion that potentially all citizens can or should be senders, producers, or creators of communication; whereas more conservative advocates of this value might argue that only a limited number of communicators can and should be senders, producers and creators of communication since the more inclusive idea might be considered 'impractical.'

The value of equality should bring about several socially beneficial consequences. In terms of communication demands, as opposed to supplies, equality promotes access to knowledge, an educated and informed body of citizens or consumers. As all communicators have an equal right to provide communications, express their opinion, needs and preferences publicly and citizens have an equal opportunity to satisfy their demands, access to knowledge and education is facilitated.

Benefits also derive from the value of equality in terms of the supply of communications. Equality promotes diversity and choice in terms of various measures: in terms of the kinds of media, the different products; in terms of diversity in function or type of content; in terms of diversity in geographic levels of operation, i.e. on the national, regional, or local community level; in terms of diversity in audiences aimed at and reached(e.g. beyond differentiation by income or age); and in terms of diversity in language, ethnic or cultural identity, politics or ideology.

Like freedom, equality also promotes objectivity in media practices. Whereas freedom promotes objectivity since independence is a necessary condition for detachment and truthfulness, equality promotes objectivity as it requires a fair and non-discriminatory attitude to sources and to objects of news reporting, and equal chance to hear and report on those sources and objects. For the purposes of the proposed study here, objectivity should only be counted as part of the value of freedom as it appears to me that it is the emphasis on freedom of the press/media rather than on the equality of all communicators, that is emphasized when talking about the value of objectivity. Also, it is more an attitude, a media practice norm, that produces objectivity and that is more closely associated with ideas of freedom of the press than with notions of equality.

Order in the sense of peace and rule of law has usually been regarded as a precondition for a just and civilized society. It can also be regarded as a communication value according to the definition of communication as a means of increasing commonalty and leading to the sharing of outlook and experience. The interdependence and stability of collective life of a society or community, according to McQuail (1992), derive from and depend on communication processes and call for expressions of identity and belonging, as well as involving social control through communication. Order can be referring to cohesion and harmony, but it is normatively ambiguous because of its potential association with control, with hierarchy and subordination of the weak to the powerful.

Order or control may refer to a particular level of social organization, and it also may refer to the processes which strengthen or weaken this cohesion of which communication is one aspect. This aspect of order, control or coherence is manifested in communication content and patterns of flow. The central question in distinguishing between these different values is that of whose order, coherence and harmony is promoted, i.e. the perspective, either from above or from below, is central. This distinction corresponds to that between order, in the sense of control, and order in the sense of solidarity and cohesion. It is not easy to keep the various aspects of this value conceptually apart. However, the following categories are suggested for analysis of foundations' definition of the public interest.

First, one has to distinguish broadly between the aspects or variables of social organization of the communications system and the symbolic content or culture that the value of order/social control may refer to. With regards to social organization one can distinguish between the top-down perspective of control/compliance and the bottom-up perspective of solidarity/attachment. These two categories are concerned with the question of 'whose order' of the communications system is promoted. Here also references to content can be included. For the control/compliance category media performance gives attention to disruption of order, it suggests negative portrayal of conflict, disorder and deviance and support given to institutions of the established order. The category of solidarity/attachment, in terms of media performance, gives attention to failings of the established order (as perceived by more marginal and cultural groups in society) and emphasizes that society is composed of many sub-groups, different bases of identity and interests. It stands against a unitary perspective of a consensual 'good' order and links private and local experience with wider social implications.

The second variable of symbolic content or culture may refer to hierarchy/quality or authenticity/identity. Here again the question is whose culture.' The first category refers to a top-down perspective and suggests a hierarchical view of culture. It refers to standards of 'high culture,' the dominant, established set of cultural values with traditional criteria of quality. Standards of 'high culture' are 'certified' by established cultural institutions and professional or expert criteria. Claims pertaining to order may be framed negatively in terms of requirements of limiting the exposure of children or other vulnerable groups to possible moral or cultural 'harm.' The category of authenticity/identity in terms of 'whose culture?' refers to a bottom-up perspective. It emphasizes alternative values relating to cultural or sub-cultural identity for which aesthetic or technical quality plays no significant role.

The three basic communications values outlined here, freedom, equality/justice, order/solidarity, are a starting point for assessing foundations' communications policy values over time. More thinking will be necessary to develop a detailed instrument for analysis that takes the changing values and debates in public policy as well as the changing capacities and opportunities of communications technology into consideration. Since foundations appear to be significant players in the public policy making process, it is important to understand how they have interpreted the term of the public interest and what kinds of projects serving the "public interest" they have funded. Insights into these processes should inform us about the more recent discourse and future developments in communications policy making.

The Gramscian notion of cultural hegemony serves as a useful concept and frame in studying the role of foundations in the public policy process. The role of key institutions in the development of culture or public policy and the political significance of that role can only be properly evaluated when considering the relationship of foundations to policy actors. According to Karl and Katz (1987), Gramsci's contribution to Marxist theory was his development of a more finely nuanced theory of civil society and its relationship to the state. Gramsci distinguished within the civil society between the relations of production, which he saw as structural, and social relations, classified as superstructure. The social relations of civil society are the cultural, ideological, and intellectual relations and forces that are embodied in such organizations and institutions as the mass media, the church, and political parties. "Indeed, the philanthropic foundation is an excellent example of an organization Gramsci would have conceived of as embodying the social relations of civil society" (Karl and Katz, 1987:3).

The authors continue, "the real success of a particular class' s push for societal predominance occurs when it uses its political, moral, and intellectual leadership to articulate a basic world view that subordinate classes come to adopt. This world view becomes, for Gramsci, the 'common sense' of the society. "....It comes to be reflected in the practices, ideologies, and institutions that comprise the dominant value system of the society....one of the chief ways in which the dominant class acts to maintain its hegemony is by forging an elite of intellectuals drawn from the dominant class, but also from subordinate classes." (1987:4). For Gramsci (Graubard, 1987) the dominant class in a society will invariably use its power to articulate views and propagate opinions that keep subordinate classes in line; "the genius of such a class is that it creates institutions, like foundations, to achieve these ends. This is rarely openly acknowledged; it may not even be covertly thought of"(p. VI). With this notion of hegemony Gramsci discarded Marx's notion of a purely coercive conception of class rule, and contributes this insight of an informational or manipulative aspect of the power relationship between classes. As helpful as such an insight might be, in order not to fall into the trap of a functionalist explanation of these processes, it is up to scholars to identify the precise process by which agents acting on behalf of foundations exercise this hegemony through policy discourse and formation.

Giddens (Wright, 1989) in his theory of structuration has emphasized the importance of allocative resources (resources involving control over nature) and authoritative resources (resources involving control over social interactions) of knowledgeable actors. The control over any resource can be specified in terms of its extension over time and space. The ability of actors to exercise control depends on their ability to employ allocative and authoritative resources in time and space in power relations. Foundations' quite substantial ability to employ allocative and authoritative resources makes them significant actors in the policy making process. The concept of resources should be helpful in understanding the process by which foundations exercise power in the process of structuration.

The process of hegemonic control by foundations might be better understood by considering the role of what Haas (1992) calls the "epistemic community." The author points to the increasing importance of the "knowledge elite" or "epistemic community" in modern societies and in public policy making specifically. The expansion and professionalization of bureaucracies and the growing technical nature of problems and their increasing complexity "have fostered an increase in the deference paid to technical experts and, in particular, to that of scientists"(P. 11). Not only do these epistemic communities help decision makers reduce their uncertainty and help justify still essentially political (as opposed to "rational") decisions, these communities "may succeed in imposing their views and moving toward goals other than those initially envisioned by the decision maker"(p. 16). Epistemic communities may be able to introduce policy alternatives, influence the selection of policies and of building coalitions in support of these policies, according to Haas (1992). If foundations are able to shape the knowledge pool, the values, the definition of the "public interest," for example, of these epistemic communities, then their role in public policy making is considerable.

Let me now consider the various ways in which foundations exercise power or influence over the public policy making process. Where possible I will refer specifically to the communications policy making realm and to the implications for the definition of the 'public interest.' Foundations have and do play a major role in policy making through their funding of research, organizations and conferences and other means of communicating policy recommendations. The funding of certain ideas over others produces a certain ideological climate and a particular pool of ideational resources from which policy actors can draw. Moreover, foundations create and are part of an intricate network of policy actors which is largely hidden from the public. In these circles policy is discussed and directions are decided often long time before they reach the public policy arenas. Their funding also supports particular types of institutions and political organizations which become significant policy actors shaping policy making and thus extend the foundations reach beyond the confines of their own organizational influence. Foundations' track record and various resources privilege them with considerable authority so that their views and decisions are met by more responsive public policy decision makers, that is relatively to other policy actors. In the subsequent discussion I will show how foundations' significant access to economic and informational resources, i.e. allocative and authoritative resources, makes them central agents in the process of structuration of power relationships in communications policy in particular and in society at large.

According to Arnove (1980) the "power of foundations has long resided in their providing necessary seed money for professional advancement and institutional growth, for innovations and research in unchartered and perhaps risky areas where other sources of funding are unavailable. Through funding and promoting research in critical areas foundations exercise decisive influence over the growing edge of knowledge, the problems that are examined and by whom, and the uses to which generated information is put." The author writes that , the Ford Foundation, for example, has been described as the "word's largest investor in new ideas"(1980:5). Whether "new" or not, and "despite the disclaimers of the big foundations that the federal government spends 150 times more than all private foundations and 1,500 times more than the Ford Foundation" (Arnove, 1980:6), foundation assets are, nevertheless, substantial. Arnove (1980:5) quotes Whitaker that in the early 1970s foundations owned nearly 1 percent of the wealth of the United States. Moreover, as Lagemann (1989) points out, due to the "competition" from new private and governmental foundations in the post World War II period, the Carnegie Corporation's assets (and presumably those of other foundations, too) were leveraged to strategically influence public policies which the foundation's key decision makers viewed as essential for establishing an ordered postwar American society. The exercise of resource allocation by foundations, clearly, is a significant aspect in shaping the policy making process. What the funding patterns are and what the impact on policy outcomes might be, is not well understood, however, particularly in communications policy making.

Several scholars have scrutinized the historical role foundations have played in the formulation of ideology in the Progressive Period (Slaughter and Silva, 1980), the development of the social sciences (Fisher, 1983) or, for example, the development of the political (Seybold, 1980) and economic (Goodwin, 1989) sciences, specifically, to show some of the real impacts foundations have had in changing the informational and ideological environment in American society. In the Progressive Period philanthropic foundations intervened in the era's "marketplace of ideas, using their vast resources to further those groups who produced and disseminated world views supportive of the status quo, and using the weapons at their disposal to contain and discredit alternative, especially socialistic, ideologies" (Arnove, 1980: 8). Slaughter and Silva (1980) write that foundations were involved in the "production" and "marketing" of ideology. Foundations recruited professors and other professionals in their role as experts who claimed objectivity and value neutrality, representing no constituency other than science, to mediate the idea flow from corporate capital to the public.

Both Fisher (1983) and Seybold (1980) provide extensive documentation of the means by which foundations structure a scholarly field in their interest. These include the funding of leading individuals and institutions; the identification, recruitment, and training of promising young scholars; the capturing of key journals in a field as well as the leadership of professional associations; the use of prestigious intermediary agencies, such as the Social Science Research Council and the American Council of Learned Societies. Foundations may eventually recede into the background, as Arnove (1980) points out, "but the seminal influence they exerted is very much manifest in the issues which are examined, the research paradigms and methods that are used, and the center-stage individuals who determine the nature and direction of the field's endeavors" (p. 13).

Specifically, according to Fisher (1983), the creation of foundations was part of the societal rationalization process and was a means of both objectifying and distancing philanthropic activities from individual capitalists. As the men at the Rockefeller Foundation believed that the best way to contribute to the improvement of society by maintaining and strengthening the system of capitalist democracy, the foundation developed goals for the development of the social sciences as part of an ideological production aimed at the reproduction of the existing social structure. Tensions between two conceptions of knowledge emerged: professional social scientists were committed to the search for objective knowledge. On the other hand, the ruling class wanted knowledge that would present their position and thereby contribute to stability and social control. In the end, the "commitment to 'academic science' and the strengthening of the professionalization process placed the social sciences above reproach. These 'new intellectuals' could then become the technical experts who would provide unbiased, objective solutions to social problems" (p.224).

According to Seybold (1980) from 1948 to 1961 a "revolution took place in American political science. The traditional institutional approach to the study of politics was replaced by the 'new' behavioral science. The long-term decline of political theory and the general disappearance of the notion of the state are for all purposes synonymous with the rise of the 'scientific' attitude toward the study of politics"(p. 269). Seybold contends that the Ford Foundation was able to set the tone for research in political science by promoting the behavioral revolution which discouraged "traditional political science, constitutional law, political history, and radical political science research" (p. 274). "As it happens, the research that was encouraged was that of the pluralist and democratic elitists and that which was discouraged was that of the power structure analysis"(p. 275). Following the author's argument, "the foundation's interest in developing sophisticated methods to analyze electoral behavior was linked closely to its efforts to judge the level and form of political protest in the United States and to develop strategies to structure that protest" (p. 298). Thus these authors have shown how in the past foundations have had direct impact in shaping the research agenda.

Goodwin (1989) also considers the importance of the funding of ideas, looking specifically at the Ford Foundation's changing role in spreading economic ideas. The author suggests that by the "1950s economics had acquired a highly privileged position with American foundations, which saw the new burgeoning social sciences as likely to provide the answers to many of society's looming problems"(p. 158). Furthermore he argues that "the foundations came to be among the most powerful vectors for the spread of economic ideas - directly themselves, indirectly through the provision of funds to others, and very indirectly by placing their Good Housekeeping Seal on the work of economists"(p. 159). The Ford foundation did much to support the spread of economic ideas in the public policy realm: through a special program concerned with Economic Development and Administration which was established during the 1950s and lasted until the 1970s, the Ford Foundation funded reforms of business schools and schools of public administration to feature applied economics, it assisted empirically based research institutes and funded empirical research. Even though the support of economics by foundations has cooled according to the author, the lasting support of the discipline is likely to have contributed to the rise of the market place standard paradigm and the "success of science over the approach of the 'philosopher kings,'"(Miller, Gandy, 1990) in communications policy making as in other policy areas. Miller and Gandy (1990) have shown, for example, that there has been a "clearly identifiable increase in economic publications[in scholarly communications journals] beginning in 1973 and repeated somewhat more dramatically in 1977"(p. 670). The foundation support of economics probably contributed to foundations' changing definition of the "public interest" in communications policy in turn and is likely to have affected which perspectives on the "public interest" were funded and communicated to relevant decision makers. Eventually, taking a degree of response lag between the beginning of foundation support for economics (1950s-70s) and its effect on the public policy decision making community into consideration, these preferences and emphases in foundation funding policies are likely to have had an impact on public policy outcomes.

Thus, by shaping the research agenda and thus the ideological climate, foundations also shape the policy making agenda. The processes by which foundations mold a scholarly field influence academics in the way in which they participate and contribute to the policy making process. As Haight (1983) points out, researchers are involved in the communications policy making process in three ways: "first, they are asked to make accurate predictions about the economic consequences of alternative plans for technological developments, in order to inform investment decision. Second, they are asked to make accurate prediction of the social consequences of these plans. Third, their expertise is used by decision-makers as justifications for decisions made" (p. 228). The relationship between foundations and researchers and foundations' shaping of a scholarly field is one part of the politics of knowledge with its significant implications for policy making. An empirical analysis of the changing definition of the "public interest" must pay particular attention to the kinds of research funded, support of other disciplines such as economics and support of professional associations or other influential institutions such as scholarly journals.

It is not simply the enormous financial resources that foundations bring to bear in the policy process, but it is also the set of intricate networks, i.e. their resources of "recruited" personnel, which define foundations' resources and which they can mobilize to exercise power. Domhoff (1979) traces foundation influence through the appointment of foundation trustees and staff and foundation created "experts" to high level governmental positions, and to "blue ribbon commissions." Domhoff (1979) identifies four general processes by which elites involve themselves in government at all levels, of which foundations are involved in the second and fourth: 1. special interest process, 2. policy planning process, 3. candidate selection process, 4. ideology process. By funding many of the policy-formation groups that bring together members of the elite and their hired experts and by providing a "setting in which differences on various issues can be thrashed out and the opinions of various experts can be heard" (1974:8) foundations exercise influence in the policy formation process. They are also active agents in the ideology shaping process as attempts are made to convince the public that "this is for all its defects, the best of all possible worlds" (1974:14). Thus, the concept of resources and its impact on the policy making process is not a straight forward one. Resources may be allocated to specific research projects, pilot studies or institutions acting on a certain interpretation of the "public interest," or they may be given to forums where these interpretations could get disseminated. It is perhaps the ability of foundations and their agents to shape the agendas of meetings and other organizations that shapes the overall public policy making agenda long before it reaches the formal stages of decision making. When analyzing financial resource allocation, attention must be paid to the support given to these kinds of channels of influence on policy planning with its implication for the dissemination of ideas and building alliances.

Several authors have emphasized the close connection between foundations, the government and corporate America. These networks are likely to influence the thinking of policy makers as well as that of foundation personnel about the "public interest." Colwell (1993) argues that the critical connection in this network are the links that involve trustees whose attitudes, knowledge, values and goals are a critical element in what foundations do, with few exceptions and. The most important influence on funding policies is the board of trustees which "almost exclusively consist of members of the political and economic elite" (p. 11). 57% of the 98 trustees studied were directors of big American corporations. From 40-47% of the trustees of the Carnegie Corporation, Ford Foundation and Rockefeller Foundation held high-level governmental positions in the past or at the time of the research. Colwell studied the links amongst foundations, which serve as an informal forum for exchanging information about "good grantees" and unsuccessful projects, and the links between foundations and policy planning organizations. The foundation trustee/policy planning organization trustee links are most critical here. Ten of the 20 foundations in the public policy sample were directly linked to 18 of the 31 recipient organizations studied. 48 foundation trustees were members of the boards of these 18 policy organizations. When Colwell studied the boards of the 31 recipient organizations and their foundation links, she found many of the board members were also foundation board members. It is significant to point out that "this is especially true of the important public policy-formation organizations" (p. 89). 40% or more of the boards of seven important public policy-formation organizations (Brookings Institution, 60%; the Council on Foreign Relations, 56%; the Hoover Institution, 53%; Committee for Economic Development, 47%; American Enterprise for Public Policy Research, 40%; the Aspen Institute for Humanistic Studies, 43%; Overseas Development Council, 40%) were also members of foundation boards. Although the precise process by which ideas are communicated, disseminated and adopted has not been documented, Colwell concludes that there is an obvious and substantial interrelationship between policy organizations' boards, government organizations and foundation boards. Thus a particular definition of the "public interest" is likely to be influenced by an elite group of trustees, recruited from corporate bodies and thus likely to favor a market place standard of the "public interest." Government agencies and policy planning organizations are likely to be particularly susceptible to the communicated ideas of trustees with links to foundations as they are likely to be dependent on foundation's funding at that time or some time in the future.

Jenkins (1989) agrees with Colwell on the importance of foundation networks adding that peer networks make foundations follow established paths and fads and that foundations resort to coordinated or joint grants to diffuse responsibility for risky grants. Larger foundations have more staff to evaluate projects, smaller foundations frequently wait until the larger founders have identified the "responsible" projects. Furthermore, Jenkins (1989) has shown that the take-off in foundation funding of social movements typically lagged behind 3-5 years. Kramer (1977) points out that the four major advocacy groups in communications policy in the 1970s had to "establish track records of enormous proportions before they received any major foundation support"(p. 1323). If this is indeed so, it would be important to analyze how foundations influence each other through their networks in defining and funding the "public interest" in communications policy and at what stages in policy debates and the decision making process which kinds of foundations get involved.

In his analysis of the emergence of the "abundance allows for deregulation" rationale accompanying the debate on the rewrite of the 1934 Communications Act between 1969 and 1978, Haight (1979) argues that what is "important to know in understanding the politics of the rewrite is how these ideas were carried forward until they became the main thrust of the rewrite" (p. 245). Through an analysis of various reports and FCC decisions Haight (1979) documents the "progressive abandonment of protections other than marketplace forces to insure diversity in mass communications. While the need to innovate has risen on the agenda, concern for fairness seems to have faded in the light of technology's promise"(p. 253). When Haight (1979) turns to addressing the question why this shift in rationale took place in the various policy formation circles, he considers, apart from the overwhelming corporate interests and the power of a new technological paradigm of abundance, the importance of "private" policy formation groups such as The Alfred P. Sloan Foundation's Commission on Cable Communications, The Conference Board and The Aspen Institute. He points to the importance of their board of directors representing mostly corporate interests, their informal channels for deliberation, and their closeness in culture and personnel with government decision makers. In addition, the author acknowledges, major universities and research institutes contribute expertise to this process of generating policy formulations which precede legislation and hearings. Clearly, foundations enable many of these groups to exist and enable many researchers to conduct their investigations. However, the role of foundations in financing these groups active in communications policy, has not been systematically considered by Haight, but appear to have had significant impact on the interpretation of the "public interest" and on communications policy making in the past.

Brown (1988) has also analyzed the reshaping of the debate over broadcast regulation in the United States but went further in identifying the role of foundations in this process. He concludes that the activities of these foundation sponsored organizations such as the Rand Corporation, the Aspen Institute, the Sloan Commission, and university based communication policy research centers, "provided a context in which a relative consensus on specific communications policy issues could be reached before they were inserted into the formal policy-making process. The mechanisms by which this consensus develops include the flow of personnel from project to project and organization to organization, plus the many informal meetings which take place between members of the communications policy community" (p.30).

In his analysis Brown (1988) identifies several processes and tools through which this shift toward an emphasis on marketplace solutions in communications policy took place. He suggests that the most significant aspect of the funding by the Ford and Alfred P. Sloan foundations was through the informal meetings around Washington at various conferences and lunch-time seminars. The Ford Foundation funded a publication with a new emphasis on an economic perspective and contracted with the Rand Corporation. Based on Rand's research Ford filed comments with the FCC. Brown points out that the characterization of the Rand research as "independent" and the very different and less favorable reception given to the research from organizations with a direct 'economic interest' reveals an important factor which contributes to the power of think thanks and, one needs to add, the power of foundations. The Alfred P. Sloan foundation was also directly, (as opposed to indirect involvement through grantees), involved in this process. The Sloan foundation funded, produced, and promoted the report of the Sloan Commission on Cable Communications. The Markle Foundation, amongst others, was influential in the creation of the Communications and Society Program of the Aspen Institute. The Program could be regarded as being involved in 'defining' major policy issues, and how those major issues should be approached and resolved. The Program, funded originally to a large proportion by the Markle foundation, organizes many opportunities for policy actors from business, government and other third sector institutions, to meet informally. Although there are many opportunities in Washington for policy actors to do so, the "ability to create and structure one of those opportunities is not a form of power so insignificant that conventional accounts of communication policy making processes can ignore it," (p.21) Brown contends.

Foundations' resources may go beyond their financial assets and channels of communication. Decision makers may have different levels of responsiveness to different policy actors (Cobb and Elder, 1983). I suggest their responsiveness to foundations is particularly high. Policy decision makers may be more open to foundation requests as they hope to bargain with foundation representatives in the process in order to obtain foundation support for other issues dear to them. Some groups are also held in greater esteem by decision makers than others and thus can demand greater access to decision makers. Their authority as legitimate "neutral" actors in public policy making may provide them with greater ease of access or ability to set agendas of policy planning organizations or other policy planning forums. Haas (1992) writes that the professional training, prestige, and reputation for expertise of scientists (of whom many are funded by foundations) accord them access to the political system and legitimize or authorize their activities. "Similarly, their claims to knowledge, supported by tests of validity, accord them influence over policy debates and serve as their primary social power resource"(p. 17). Through their promotion of the image of "neutral" policy actor and their proven track records as professionals and experts, foundations and their grantees appear to have better access to decision makers than others. Cobb and Elder (1983) write that the decision maker may be indebted to a particular group or identify herself as a member of a group. The flow of personnel between foundations, think tanks and governmental institutions is relevant here. Thus foundations appear to be in a strong position to promote a particular interpretation of the public interest through their communications channels and their authority as legitimate policy experts alone.

The issue of elite group decision making in the democratic process stresses again why it is important to study the role of foundations. Lagemann (1989) is concerned with the role of elites in her discussion of the "politics of knowledge" and the role of private foundations in the American political process. According to her assessment of the Carnegie Corporation, the foundation continues to confront the dilemmas of an elite institution trying to shape public policy, that is the foundation's preference for efficiency over participation, in a sense of expertise over democracy. Expertise could stand in opposition to universal and equal participation in public affairs; it could provide a basis for claims to superordinate rights. And yet, despite this, it was deemed by foundations to be necessary to modern life. The struggle over competing goals of efficiency and equity and the way in which foundations appear to favor efficiency over equity goes to the heart of the democratic process and emphasizes the significant role of foundations as political actors. This apparent preference for efficiency suggests that foundations' interpretation of the public interest definition is more likely to lean towards a marketplace standard in communications policy making.

Foundations are also significant actors in the way in which they have supported or created institutions such as think tanks or political organizations, that is in the way in which they have shaped the character and nature of the political landscape. Brown (1991), for example, calls attention to the "substantial core funding"(p. 18) provided by the Markle Foundation to set up the Aspen Institute's communications program. Similarly, Markle and Ford' s funding have been central to, for example, establishing the communications program at the Rand Corporation and other communications programs at universities or at the Brookings Institution. Through policy planning organizations such as these foundations can play important roles in shaping the policy making process and outcomes.

Foundations have also had significant impact on existing political organizations, particularly with respect to so called advocacy and "public interest" social movements. According to Judis (1992), the pluralist vision of democracy "vastly overstated the extent to which America's pressure groups represented the general public or were equal in power to each other" (p. 15). Judis asserts that the new advocacy political organizations have almost as narrow an economic base as the old organizations of the 1950s, not the least due to the impact of foundation funding. Jenkins (1989) studied philanthropic funding and found that between 1958-80 less than one percent of total foundation funding went to "social movements" or "advocacy groups" (unfortunately he fails to ever define those terms clearly). Only 17% of the money to social movements went to grassroots organization, the rest went to professional groups. According to Judis (1992) foundations' major impact on these organizations has been structural rather than partisan or narrowly political. Jenkins explains:

foundations are political cautious; grass roots organizations lack a clear track record and are more likely to become involved in protests or other activities that might stir criticism; they are more informal and decentralized, lacking the fiscal and management devices that foundations expect from their recipients; professional organizations are more hierarchical in structure and are so more intelligible to foundation boards who typically come from business and academia; the lower likelihood of being connected to the peer networks of foundations also places grass roots organizations at a disadvantage in funding. Therefore, foundations have encouraged professionalization and discouraged militant protest strategies.

Nevertheless major foundations were instrumental in the formation of many of these new organizations. Foundation grants made these organizations less dependent upon members and have encouraged professionalization. As a result, new lobbies, research groups, and think tanks that have arisen over the last three decades have not provided an alternative line between citizens and their government. Instead, they have become centralized bureaucracies as remote from the average citizen as the government itself and has increased their susceptibility to foundation influence. Roelofs (1987) suggests that 'leadership training' provided by foundations also deradicalized citizen movements in the 1960s and 70s. Thus foundations do not only shape specific policy debates by shaping the politics of knowledge through the available research, but foundation policy tends to favor or weaken certain policy actors by favoring certain forms of political organization over others. Clearly, common notions of the workings of a liberal pluralist democracy in the United States are challenged by assessments like Lagemann's and Judis'.

According to these two authors, foundation funding does not only have an impact on political organization, but also more specifically on the kinds of issues organizations have pursued. Foundation preference for specific outcomes steers organizations into short-term projects that are deemed "fundable" but deters development of long-term programs, according to Jenkins (1989).

Judis adds that foundations often prefer studies of action to action itself, prefer studies with uncontroversial conclusions that will not call into question their own impartiality. A major calculation for foundations is the likelihood that the projects will generate significant change, thereby rebounding to the credit of the foundation as an effective social change innovator. "The clearer the likelihood of victory , the greater the probability of funding"(Jenkins, 1989:302). This suggests that the more the request for funding is within the confines of the existing political system, that is the more clearly the grantee can demonstrate the likelihood of specific policy changes in terms of reform rather than radical restructuring, the more likely the funding. Jenkins (1989) concludes that "foundations could be seen as political gatekeepers, identifying the leaders and organization that would eventually prevail as the legitimate representatives of new social interests" (p. 311). Therefore, the analysis of the definition of the "public interest" by foundations is important not only in terms of what is and what is not considered a legitimate social problem, but more specifically what kinds of organizations are likely to be supported in pursuit of the "public interest." The kinds of patterns identified by Jenkins and Judis are likely to characterize the framing and funding of the "public interest" in communications policy making.

Advocacy groups in communications policy in the 1970s such as the Office of Communication of the United Church of Christ, Citizens Communications Center, Action for Children's Television and the Media Access Project also have received significant foundation funding, from the most part, however, from small foundations. Of the major foundations, only The Ford Foundation and the Rockefeller Family Fund have had significant involvement (Kramer, 1977). Thus foundations play an important role in creating and supporting institutions or through the denial of funding in preventing institutions to emerge. It appears that only a small number of larger foundations, particularly Ford and Markle (Kramer, 1977) played a significant role in this process.

Kramer (1977) points to several advocacy organizations in communications policy "that were designed to enhance direct public participation in the media's setting of the national agenda [which] have not been funded" in the 1960s and '70s and soon folded or adjusted their objectives to foundations' conceptions of public needs. Organizations from the "counter ad" movement (PCI - Public Communications Inc., 1971-73) or organizations concerned with the coverage of African Americans and their media needs (Unity House and later BEST - Black Efforts for Soul in Television, 1968-72), according to Kramer were too radical and "did not respond to their [foundations'] own preconceptions of 'public need:' the need for educational effort and the need for a 'quality' or 'cultural' alternative to commercial broadcasting as opposed to the need for redistribution, reallocation, and alteration of decision making, control, and economic power over broadcasting"(p. 1329). The author suggests that foundations' particular definition of a "public interest" guided their funding decisions.

The above arguments emphasize the importance and rationale for studying the role of foundations in public policy, particularly communications policy. Foundations' significant access to economic and informational resources, i.e. allocative and authoritative resources, makes them central agents in the process of structuration of power relationships in society. These resources allow foundations to exercise informational control of power relations through their involvement in the politics of knowledge. The politics of knowledge, in turn, in which foundations are involved in through their support of elite and expert institutions and communications activities privileges foundations and their recipients as actors in the public policy process and challenges common notions of liberal democracy where actors supposedly have an equal chance of determining outcomes. This privileged position of foundations in the policy making process, particularly in the issue evolution and definition stage, may in turn enhance foundations' power as the particular kinds of policies supported by foundations appear to privilege and call for further expert knowledge and processes. Of the different policy areas foundations are involved in, analysis of their involvement in communications policy warrants particular attention by scholars. Decisions in this area more so than in others determine the negotiation and distribution of economic, political and cultural power in society at large.

To conclude, the paper suggests that understanding the role of private philanthropic foundations in the politics of knowledge will help us understand better the public policy making process and that research in this area is lacking. I have argued that it would be particularly relevant and useful in order to begin to understand this process to analyze the way in which foundations define the "public interest," to study the funding patterns in support of that "public interest" and their ability to communicate this definition formally and informally to relevant decision makers with its implications for policy outcomes.

Such a study might focus in depth on only one foundation, the Ford foundation, as the apparently most significant actor in communications policy making in the past. It would study the official documents, such as annual reports, other publications, or official testimony at hearings or conferences, and internal documents as to the changing meaning of the "public interest" over the years. The "public interest" definition would be categorized as to its emphasis on a marketplace standard, product diversity as opposed to idea diversity, and as to the means of arriving at it. Concluding from the above discussion one would expect to find a change in the definition of the "public interest" approaching the market place standard. Moreover, it would need to be analyzed in terms of the above identified three core communications policy values: freedom, equality/justice, and order/solidarity. Furthermore, the study would identify what kinds of research, research organizations and which policy planning organizations, events or forums, or advocacy groups in the communications area received funding for what purposes. Particular attention must be paid to those organizations which received all or a large proportion of their funding from The Ford Foundation. One would be able to study the official documents produced by these organizations. Where possible one should try to identify those organizations which were unsuccessful in obtaining funding and to ascertain why (from the foundation's perspective.) Another important aspect of understanding the role of foundations in communications policy would be to interview staff and trustees of foundations and relevant grantees, as well as policy decision makers. This would aim to explore the informal channels of communication that appear to play such an important role in advancing certain issues and their framing onto the policy making agenda. Developing an organizational chart, with the different links through board of directors and other overlap in personnel should help illuminate this process of informational communications channels better. Particular attention should be paid to formal and informal meetings, their agendas, possible conclusions, and documents or press coverage produced. As many of these kinds of communications go on behind closed doors and are not well documented, this aspect of foundations' role in communications policy making will be particularly difficult to track.

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FACING THE FUTURE:

Attitudes of Journalism Educators and Students About New Media Technology

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ABSTRACT

FACING THE FUTURE:
Attitudes of Journalism Educators and Students About New Media Technology

The media are being transformed by sweeping changes in the way information is gathered, processed and disseminated. This study, which uses Q-methodology to examine attitudes of journalism students and educators at a Midwestern university toward new media technology, identifies four factors. Champions of Change are eager, seeing technology primarily as a tool empowering users. Other factors express profound concerns about issues ranging from manipulation potential to an increasing knowledge gap among media consumers. Results of the study are discussed in light of the theory of diffusion of innovation.

FACING THE FUTURE:
Attitudes of Journalism Educators and Students About New Media Technology

It has become impossible to use any of our traditional news media without being told something about how those uses, as well as the media themselves, are being transformed. Information about information -- the Information Age, the Information Superhighway, the Information Revolution -- is inescapable and, inescapably, contributes to the ways in which those changes are perceived. For journalists and journalism educators, the bombardment hits particularly close to home. As members of the general public, of course, they see the same stories as everyone else: about business deals made and broken, about shifting communication policies, about the real and potential impacts of technological change. The number of such stories is increasing by exponential leaps and bounds; for example, the term "information superhighway," which appeared in seven news stories in 23 major print and broadcast outlets in January and February 1992, appeared in 1,145 stories in those same media in the first two months of 1994. (Pavlik and Szanto, 1994)

But as people in the business of communication themselves, media professionals face additional pressures. Quite aside from the voluminous coverage in the mainstream press, journalists cannot open an industry publication without being told how their own jobs have changed, are changing and will continue to change. Articles on new media technology and its implications for journalists appear with increasing frequency in the nation's two major journalism reviews, as well as in Quill, the publication of the profession's largest umbrella organization, the Society of Professional Journalists. A small sample of offerings within the past two years:

- * American Journalism Review reported last year that although phone companies, cable systems and entertainment producers are "rushing headlong into the new interactive world," the print media are trying "to figure out how they fit in." (Moeller, 1994) AJR also reported recently on explorations of alternate delivery mechanisms by both Knight-Ridder and the Tribune Company, publisher of the Chicago Tribune.

- * Last fall, Columbia Journalism Review offered an article titled "Opening Up, Online: What Happens When the Public Comes at You From Cyberspace?" The benefits, according to the story, include "a heightening of journalistic accountability and the opportunity to know better the needs of the people journalism serves, notions too often overlooked in the world of paper and ink." (Wolff, 1994) A year earlier, as part of a cover story titled "Future Tense: Riding the High-Tech Wave," CJR offered this vision of "tomorrow's journalist": "The reporters (the ones equipped with the multimedia kits) will come to their editors and say 'Here are the still photos we need to shoot, here's the video we need, here's the audio to record, here are some new ways to illustrate this information, and here's my script.' Editors will have to be equally adept." (Oppenheimer, 1993)

- * Quill has been especially devoted to covering industry change. Its March 1995 cover, for example, offered "Big Talk From Online Services: Who's Got What for Journalists." The previous spring, back-to-back issues featured a special report on new information technology and its impact on media content, economics and employees, followed by an issue whose cover story was "TV News in the Information Age: Boom or Bust?" Articles included "Will The Techno Tsunami Wash Us Out?" and "Driving the Info Highway Without a Map." Quill's "Technology and the Media" section also provides regular updates on journalistic forays into the online world.

Journalism educators, who help shape the ideas and attitudes of those joining the profession, also have begun to be inundated with information about new media technology. Academic exploration of the new media in their first decade was relatively sparse, with articles on "new technology" accounting for just under 10 percent of the articles that were specifically about telecommunications in 15 scholarly journals from 1984 to 1989. (Vincent, 1991) But that pace has picked up considerably in the 1990s. Articles now appear with some regularity in the Journal of Communication, Journalism Quarterly and Communication Research, along with many of the more narrowly focused scholarly journals. Topics of recent discussion have ranged from the application of First Amendment rights to the Baby Bells as the telephone system becomes "a significant information medium to which mass communication concepts ... are relevant" (O'Neill, 1994) to an examination of virtual reality, described in the editor's note prefacing a special Journal of Communication symposium as "too important, too wondrous, too powerful, to permit continued disciplinary ignorance." (Levy, 1992)

In light of the growing attention to new media among both journalists and journalism educators, this exploratory study considers the attitudes toward the new media among one group of soon-to-be journalists and current journalism professors. It attempts to increase our understanding of the concerns that may shape not only journalists' own decisions to adopt these innovations but also the way journalists and journalism educators structure communication about evolving technologies for their audience. That audience includes journalism students, researchers and practitioners, as well as members of the reading and viewing public.

After the method and results are described, the results will be discussed in the context of the theory of diffusion of innovation. This theory is appropriate because both journalism educators and their students, who are about to become new newsroom employees, are likely to play a vital role in shaping attitudes toward new media.

METHOD

Journalism students and faculty members at a major Midwestern university described their attitudes by Q-sorting statements about new media. "New media" means different things to different people. For some, cable TV may be seen as a new medium. Others would not think of cable as new but might think of hypertext and interactive media that way; still others may not yet be fully aware of those technologies. Therefore, for the purpose of this study, the term "new media" was not defined for participants. Rather than being limited to a definition that might have excluded or included more than their perceptions, participants were left to define the term for themselves. This procedure does widen the potential range of responses, but in an exploratory study such as this one, it was deemed better to be very broad than very narrow. In addition, the methodology used here is self-referential: Definitions emerge from the actions of the respondents, rather than being assumed or determined beforehand.

Q methodology (described in McKeown and Thomas, 1988, and Brown, 1980) was used for this study because it is particularly well-suited to developing exploratory understandings of people's attitudes -- an appropriate goal given the newness of the study of new media. Q methodology does not make claims to generalizability, but provides a rich depiction of the attitudes of small groups or even individuals. The method is not designed to answer questions concerning how MANY people of a particular type exist out there in the world. Rather, it offers a way to identify various attitudes, opinions or beliefs that people hold about a particular topic.

Subjects in this study were almost equally divided among three groups: undergraduate students, graduate students and faculty. All the grad students and faculty had professional journalism experience, and seven of 13 undergraduates had professional or intern experience. The 42 subjects ranged in age from 19 to 67, with a median of 34. Eighteen were women. All were computer-literate. All but seven had used Internet or e-mail; half had a home computer with a modem.

The subjects were asked to read a sample of opinion statements (e.g., "The new media will narrow the information gap between the rich and the poor") and place them along an 11-point scale that ranged from most disagree (- 5) to most agree (+ 5). Forty-eight statements were used from several hundred gathered from articles in the popular and professional press about new media, as well as from interviews with faculty and students. The final 48 statements were selected by one of the authors, using a structured sampling process common in Q methodology. The original statement population is first divided into categories. (Note that, in Q, the "population" and "sample" consist of statements, not people, and the output factors consist of people, not variables.) A balanced mix of positive and negative statements, designed to express the range of viewpoints in the original group, are chosen from these categories. Table 1 shows the statements used here.

Following normal Q-methodology procedures (McKeown and Thomas, 1988; Brown, 1980), the Q-sorts were correlated and factor-analyzed, producing four attitudinal types, or people who think about new media in similar ways. After varimax rotation, the principal components matrix accounted for 53 percent of the variance (19, 14, 11 and 9 percent, respectively). Factor loadings of .420 were considered significant (p <.01).

Standardized statement arrays for each factor also are presented in Table I. For any factor, the two highest (+) Z-scores can be considered equivalent to + 5 on the original 11-point scale.

Factor One, with 15 subjects, was the largest. Sixty percent female, the factor's median age was 38. All but three had used the Internet or e-mail, and eight had home computers with modems. All but one had professional experience.

Factor Two had 14 subjects and a median age of 34. It was equally split between women and men and between those with or without home computers and modems. All but two had journalism experience.

Six of the eight people on Factor Three were men. All but one on the factor had used Internet or e-mail, although only two had access to a computer at home. Half had professional experience. The median age was 26, although the factor included the study's oldest participant, a 67-year-old male.

All of the five on Factor Four were men with considerable journalistic experience. All were Internet or e-mail users, but only two had home computers with modems. The median age was 37.

Interpretation of the factors incorporated use of the demographic data, the factor Q-arrays and the comments that subjects made about the statements with which they most agreed and disagreed.

RESULTS

Based on the interpretations, the factors were named (I) Champions of Change, (II) Pessimistic Prophets, (III) Laid-Back Liberals and (IV) Skeptical Optimists.

FACTOR ONE: Champions of Change

Champions of Change are ready for the computer age. They are by far the most eager of all the factors to be a part of the change they see coming on, as well as the least concerned about its social implications. They see tremendous potential for the new media to improve their own lives. They believe these media are empowering and will fundamentally affect both the way we access information as consumers and the way we provide it as journalists.

Champions of Change, who make up the largest of the factors, include nine women and six men, with ages ranging from late teens to mid-40s. Although they believe they have seen the future, the image may be somewhat illusory for some; two of the three people who loaded most heavily on this factor indicate they do not use the Internet or e-mail and do not have a computer with a modem at home.

Champions of Change are prepared to incorporate new media technology into their lives, including their jobs, their entertainment and the way they communicate. They agree most strongly (+ 5, z=2.21) with Statement 1 ("The possibilities created by new media technology are exciting"), an emotional statement rather than one that expresses a more concrete aspect of new media. Part of their excitement stems from the opportunities they see new technologies providing for both audience and media. The audience will gain an increased role through the ability to provide almost instant feedback to media organizations. Those organizations, along with being able to offer entertainment and news on demand, will need to incorporate feedback into their product.

But Champions of Change, while they recognize both the personal and institutional potential of new media, also realize new technologies place a burden on the existing media and on those associated with it. Beyond their initial excitement, they recognize that new technologies mean journalists will need to learn new ways of writing and working; they strongly agreed (+ 5, z=1.80) with Statement 5 ("The new media will call for different ways of teaching people how to write and work for the media"). These are people who ought to know; only one of our 15 Champions does not have at least some professional journalism experience. They see the new technology as a boost to the industry IF the industry learns to use it; they agreed more strongly than any of the other factors (+ 4, z=1.74) with Statement 30 ("It is important for the future of the newspapers that they try to exploit their information franchise to develop products for readers that use existing and emerging electronic technologies").

Champions of Change are the only factor to agree (+ 2, z=0.80) with Statement 26 ("If, as author/journalist John Katzenbach says, 'Information is the currency of journalism,' you had better learn how to operate the ATM because there often isn't a teller anymore"). As one respondent said, "With advertising and circulation declining and other companies jumping into the information business, it's essential to the long-term survival of newspapers that they use these new forms of communication."

These attitudes also show up in the statements with which Champions of Change most disagree. Someone afraid of being replaced by a machine would not be excited about the new technology and, in fact, our Champions do not think the changes they foresee will eliminate their jobs. They disagree most heartily with Statements 7 ("New media technology will eventually eliminate my job"; z=-1.76) and

39 ("Interactive media will make journalists obsolete"; z=-1.71). "Far from eliminating my job," one respondent exclaimed, "new media technologies will create jobs we haven't imagined yet -- thousands of them!"

Champions of Change also strongly disagree (- 3, z=-1.19) with Statement 21 ("New media potentially could decrease the number of viewpoints"). One person who loaded heavily on this factor said new technology "will increase the number of viewpoints because more choice of stories and columns will be available. Papers don't have the space to run them now. Electronic papers can have nearly unlimited news hole." In fact, the potential that Champions see in the new technology even exceeds the promotional efforts of media organizations; they disagree (- 3, z=-1.26) with Statement 46 ("The capabilities of interactive media are over-rated").

Champions of Change, then, think new media technology will cause fundamental changes in the way people communicate, gain knowledge and entertain themselves. And although they have some reservations about those changes, they appear unafraid of them. Champions see the new media as something they can control, not as something that controls them. They disagree with the Pessimistic Prophets of Factor Two, for example, about the manipulative power of new media. Nor do they see new media as necessarily divisive, as do the Laid-Back Liberals on Factor Three. Like the Skeptical Optimists on Factor Four (with whom they have much in common), they believe new media actually can strengthen our sense of community.

Champions of Change are not blind to possible social problems caused by new media, however. Privacy troubles them the most -- as can be expected from someone who envisions himself or herself personally using new media and thus thinks of problems as a user, not an outsider. The Champion is in control of his or her own use of the new media -- but cannot control what use OTHERS may make of the information available and is somewhat troubled by that fact. For example, Champions of Change disagree rather strongly (- 4, z=-1.40) with Statement 22 ("Privacy is not a problem with the new media"), and express some concern about the potential for government regulation, as well. They also may recognize other ethical concerns; Champions of Change agree (+ 3, z=1.10) with Statement 4 ("There are some serious ethical problems related to the new media technology"), and one respondent commented that "the widening of the information gap and knowledge gap has been one of my concerns for 10 years."

As a group, Champions of Change believe a communications revolution is not far away. They are comfortable with both technology and the prospect of change.

FACTOR TWO: Pessimistic Prophets

Like biblical prophets, the seven women and seven men on our Factor Two cry out about the social ills they see looming because of a destructive activity that society will practice only at its peril. Pessimistic Prophets see serious problems with new media and may believe they are trying to warn of the dangers while everyone else is extolling the virtues of technological change: "New media comes in disguised as a friend," says one. The Pessimistic Prophets are afraid of new media technology and feel overwhelmed by it. Only one of the five statements with which they agreed most strongly was optimistic.

The Pessimistic Prophets' strongest fear about the social effects of new technology centers on a concern about manipulation of the individual user; the Prophet is particularly worried by authoritarian aspects of new media that threaten deeply held values and beliefs. The Prophets disagreed most strongly (- 5, z=-2.36) -- and much more vehemently than did any other factor -- with Statement 16 ("I am not concerned about the potential for manipulation"). And they were alone in agreeing (+ 4, z=1.09) with Statement 19 ("A tool is something you manipulate; technology manipulates you. That's a danger of new media"). As the woman who loaded most purely on this factor commented: "New media is the potential for manipulation. If allowed, it could be a problem beyond control. It's bad enough already."

Perhaps for similar reasons, Pessimistic Prophets are worried about privacy. They disagree strongly (- 4, z=-2.03) with the statement that "Privacy is not a problem with the new media." More broadly, they express a strong concern with ethical implications of new technology. The statement with which they agreed most strongly (+ 5, z=2.11) was Statement 4 ("There are some serious ethical problems related to the new media"); not only was their z-score on that statement significantly higher (a difference of greater than 1.0) than that of any other factor, it also was 0.73 higher than their OWN z-scores for any other statement with which they agreed. As one Pessimistic Prophet put it, "Privacy, truth and fairness will decrease as diffusion [of new media technology] occurs."

The Pessimistic Prophets have several specific ethical concerns about the new media and their effects on society. They disagree (- 3, z=-1.32) with Statement 42 ("The new media will narrow the information gap between the rich and the poor"). They also reject (- 3, z=-1.25) the idea contained in Statement 25 ("New media technology can help create a better sense of community"). As one put it, "If the viewer is allowed to retrieve only what they [sic] want, their interests will turn to self, and not towards their community."

The Prophets fear that people will become immersed in their own interests and less aware of the larger world because of new media's ability to allow users to choose only the news they want, thus missing salience cues provided by traditional media through headlines, layout or story placement. Pessimistic Prophets strongly agree (+ 4, z=1.15) with Statement 13 ("The ability to select only what you want may result in missing salience cues about the world. For example, if you want to read only sports, you may at least glance at the front page and note the headlines, thereby getting some other news"). In the words of one, "Missing salience cues could result in: closed minds, ignorance, negligence, etc." The Pessimistic Prophets are also dubious about the notion that new forms of television "could bring families closer"; they strongly disagree (- 4, z=-1.62) with Statement 41 ("The new television could bring families closer. Because it would satisfy so many of our entertainment and informational needs at home, family members should find themselves gathering in the home more often").

This factor also feels overwhelmed, fearing that new media technology is bringing sweeping changes and outrunning society's ability to understand and control it. The Pessimistic Prophets are uncertain of the promise of the future and appear acutely aware that change does not necessarily mean change for the better. The group's expectation of profound change is evident in its strong disagreement

(- 5, z=-2.17) with Statement 12 ("The new media won't fundamentally change the way we communicate and gain knowledge"). Champions of Change and Skeptical Optimists (factors one and four, respectively) also disagreed with this statement, but much less strongly. The Prophets' sense of failing to keep pace with change also comes through in strong agreement (+ 5, z=1.38) with Statement 34 ("Education is lagging technology in general"). The Pessimistic Prophets' perspective on education is reflected in the comments of one respondent: "Changes in education are constantly needed and not attended. Technology is rapidly changing and is past the rate of change in education twice over."

Despite this sense of being overwhelmed, though, the Prophets, who range in age from 19 to 49, are perhaps being drawn onto the new media bandwagon -- and not entirely against their will. For example, they agree strongly (+ 4, z=1.30) with Statement 1 ("The possibilities created by new media technology are exciting").

At the same time, the Pessimistic Prophets believe new media will not have an enormous impact on what they do as professionals. They strongly disagree (- 4, z=-1.45) with Statement 39 ("Interactive media will make journalists obsolete.") and, less strongly (- 3, z=-0.89), with Statement 7 ("New media technology will eventually eliminate my job."). More generally, they believe -- whether in hope or in denial -- that changes are less than imminent; the Prophets agree (+ 3, z=0.97) with Statement 9 ("For the vast majority out there in the real world, new media technology is going to be something they'll read about, but it's not going to affect their lives to any great degree. At least not for 5 to 10 years.").

Interestingly, the fears and predictions of the Pessimistic Prophets do not come from ignorance about new media. Eleven of the 14 people on this factor say they use Internet or e-mail, and six have computers with modems at home; only two of the younger respondents lack media experience. For the people on this factor, however, use of new media means something far short of wholehearted acceptance.

FACTOR THREE: Laid-Back Liberals

The Laid-Back Liberal sees new media as problematic but is less concerned with manipulation than the Pessimistic Prophet. This difference may stem from the Liberals' belief that most people, themselves included, can think and act independently and therefore are not easily manipulated by technology. The Liberal sees people who use new media technology as active decision-makers, not passive subjects of social control. As the most highly loaded respondent on this factor put it: "Technology doesn't manipulate -- corrupt people in power do."

These two women and six men -- who range in age from 19 to 67, the oldest of any respondent -- are fiercely individualistic, agreeing far more strongly than any other factor (+ 3, z=1.08) with Statement 33 ("I want electronic interaction to be as individualistic and anarchic as it has been"). Laid-Back Liberals see the user in control of technology -- and they consider user control an attractive feature. They like the idea of being able to retrieve what they want when they want it.

More than half the Laid-Back Liberals are young men at or near the start of their journalism careers; four of the Liberals do not yet have professional experience. However, all but one Liberal has used

Internet or e-mail, and most also have computers with a modem at home. Yet while they are aware of the possibilities of new media technology, they do not see it becoming pervasive any time soon. They believe real changes are at least five years away; the group gave its highest nod of agreement (+ 5, z=1.86) to Statement 9 ("For the vast majority ... [new media technology] is not going to affect their lives to any great degree. At least not for 5 to 10 years"). Furthermore, new media technology, as an emerging phenomenon, remains largely inaccessible to a wide audience, the Liberal believes. As the respondent who loaded most highly on this factor said: "That's how technology is -- it's available to a select few until it's been out a while."

Computers do not seem to threaten the Laid-Back Liberals' future as professional journalists. They disagree vehemently (- 5, z=-2.02 and -1.70, respectively) with Statements 39 ("Interactive media will make journalists obsolete") and 7 ("New media technology will eventually eliminate my job.") -- the same two statements with which the Champions of Change most strongly disagree. "No matter how interactive the media are," one Liberal said, "we still need someone to get the news from the scene."

What makes this group distinctive is its concern about elitist aspects of new media and their effect on a pluralistic society. The Pessimistic Prophet sees new media as a threat to the individual, both in isolation and as a member of a broader community. The Liberal sees these media as a threat to the social cohesion linking the individual members of that community. Laid-Back Liberals are extremely concerned about new technology's potential to deepen divisions among the social classes, threatening communication across the widening gulf. They believe new media might increase the information gap, disagreeing (-3, z=-1.50) with Statement 42 ("The new media will narrow the information gap between the rich and the poor"). Liberals commented that "New media technology is often expensive, which means only people in higher social classes can afford it," and "using interactive media usually requires higher education."

Perhaps some of this concern stems from a worry that they personally might be left behind. For example, Liberals -- the group with the highest percentage of "Generation Xers," five of the eight people on this factor -- are more sensitive than the other factors to the potential effect that age differences will have on perspectives about new media. They agree very strongly (+ 5, z=1.67) with Statement 18 ("I would guess there is a big difference in perspective about the new media depending on age"). Nor do they think new media technology will help unite families, disagreeing (- 3, z=-1.08) with Statement's 41 proposition that new media will bring families closer together.

However, they seem uncertain whether new media will limit the number of ideas to which people are exposed. Liberals disagree more strongly (-4, z=-1.66) than the other factors with Statement 21 ("New media potentially could decrease the number of viewpoints"), yet they strongly agree (+ 4, z=1.43) with the lack of salience cues provided by new media described in Statement 13. Perhaps the Liberals recognize both the potential breadth of the new media AND the potential for the user to actively limit the range of ideas to which he or she chooses to become exposed.

Like everyone else, the Liberals see privacy as a potential problem with new media, strongly disagreeing (- 4, z=-1.56) with

Statement 22 ("Privacy is not a problem with the new media"). They are concerned about manipulation, but again, they see that manipulation coming from other people and not technology itself.

The statements about which Laid-Back Liberals do not express a strong opinion also are telling. Liberals are less excited than the other factors about new technology, agreeing only weakly (+ 1, z=0.50) with the statement that new media technology creates exciting possibilities. This relative lack of enthusiasm is understandable, given the Liberals' social concerns and their belief that technology will not change their lives that much in the near term. They are willing to give new media technology a try -- if it is available to them -- and they are not afraid of it. Yet they will bring a large grain of salt and a sizable serving of concern for social costs to the table with them when they dig into this new technology.

FACTOR 4: Skeptical Optimists

The Skeptical Optimist wants to believe in the potential of new media to improve society as well as the personal quality of life -- but is not convinced they will. He (the five Skeptical Optimists are all male, ranging in age from 33 to 53) sees new media as a tool that is both personally and socially empowering. The Skeptic agrees very strongly (+ 5, z=1.87) with Statement 25 ("New media technology can help create a better sense of community"), and his z-score on that statement is significantly higher (1.0 or more) than that of any other factor. He also strongly agrees (+ 4, z=1.50) with Statement 8 ("New media technology developments will help to improve my quality of life."). He disagrees very strongly (- 5, z=-1.71) with Statement 43

("Interactive media are impersonal and depersonalizing"), seeing new media as potential agents for positive change.

However, more than the other factors, Skeptical Optimists express a lack of conviction about the future. They might be characterized as Champions of Change with their feet firmly planted on the ground. They agree with the Champion that new technology has enormous inherent potential; all the Skeptics use e-mail or Internet, so they all have personal experience with at least one aspect of that potential. Yet they are somewhat cynical about the likelihood that the potential will be realized, and so are reluctant to get on board. The Pessimistic Prophets are pretty sure the future will be dark; the Champions of Change are prone to think it will be rosy. The Skeptics think it COULD be rosy, but probably won't be. For example, although new media can help create a better sense of community, they likely will deepen divisions among the social classes (+ 3, z=1.11 on Statement 48).

The demographics show that each of our Skeptical Optimists is a child of the mid-twentieth century, aged 33 to 53, probably a member of the middle class, living in an upscale, education-oriented community -- and he is on the predictable guilt trip. He believes he is a relatively privileged member of society now and will be in the future; hence, his belief that he will benefit from new media technology. But he also is troubled by his social conscience. He sees new media as one more potentially empowering tool that will fail to live up to its ability to create positive changes for society as a whole and may even hasten social fragmentation. He recognizes the controlling elements of new technology -- and believes he will be among the people to exercise that control.

For example, he does not think the new media will narrow the information gap between rich and poor (- 4, z=-1.15 on Statement 42), and fears that new media may actually decrease the number of viewpoints (+ 2, z=0.77 on Statement 21). In the words of one respondent: "If somebody is far away from new media technology, he/she will be isolated in society." Interestingly, and perhaps ironically, he is not greatly concerned with privacy, ethics or manipulation, and is somewhat more open than the other factors to the idea of government regulation to address the potential abuses of new media (though the Pessimistic Prophets also are willing to consider the possibility); the Skeptic disagrees (- 3, z=-1.06) with Statement 23 ("The government should not regulate new media").

Their age indicates Skeptical Optimists are fathers of relatively young children -- or at least have friends who are. The Skeptical Optimist is particularly sensitive to the cluster of statements (Nos. 14, 18 and 45) relating to the difference of perspective between children and adults; he thinks the new media will isolate him from the next generation, perhaps much in the same way he felt isolated from his parents' generation by other enormous social changes. For example, he agrees more strongly (+ 3, z=0.97) than the other factors with Statement 14 ("I think the new media will create a huge generation gap as to how we conceive knowledge and what knowledge means").

Finally, the Skeptic is much more socialized as a journalist (a profession that rewards and reinforces skepticism) than the other factors, which have a mix of undergraduates and older respondents. He tends to evaluate new media professionally as well as personally and vehemently disagrees with the idea that these media will eliminate his job (- 5, z=-2.06 on Statement 7). He does not see the new media as a potential threat, perhaps because people still will need a mediator to help make sense of information.

However, he does see new technology as something that will profoundly affect his job and his industry. He agrees (+ 5, z=1.74, and + 3, z=1.32, respectively) with Statements 6 ("New technologies will make it possible and necessary for those in the news business to incorporate feedback into what they produce") and 5 ("People in the media will have to think more about the content of news and less about the specific means of telling the story"). He is more convinced than other factors that new technologies differ significantly from previous ways of communicating information; he strongly disagrees (-4, z=-1.5) with Statement 35 ("The new technologies are not providing new information, merely the same stuff in different packages").

CONSENSUS ITEMS

The four factors agree on the relative placement (within +/- 1.00 Z) of several statements, including four (statements 10, 27, 32 and 37) that indicate a degree of ambivalence and uncertainty about new media. Of the four, Statement 27 ("For the consumer's standpoint, the information future is rich with choice and possibility. For journalists, it is much more troubling ... people won't need a mediator any more") elicit the strongest reaction; though all four factors disagree, the Skeptical Optimist (who generally is more attuned to statements directly relating to journalists' roles) disagrees most strongly (- 4, z=-1.19). The four are in almost perfect harmony about Statement 32 ("When I look at where we were 10 years ago and where we are today, I don't know if anyone could have imagined where we would be with technology and surely it's going to be like that in the next 10 years"). All agree somewhat (+ 1 or + 2) with the statement; their z-scores barely vary: from 0.5 to 0.8.

These consensus items seem to indicate that while respondents tend to see the future very differently, as indicated by their Q-sorts, they are not wedded to their perceptions. Whether they are open-minded or merely confused by the flood of information about changes in their profession is open to interpretation. What seems certain, however, is that while the journalism students and educators in this study all have definite attitudes and ideas about their journey along the "superhighway," they are not be quite sure what lies around the bend. Some see that uncertainty as exciting; some see it as scary. Most probably see at least a little of each.

DISCUSSION AND CONCLUSION

Although this study did not seek to predict patterns of diffusion of new media knowledge or use based on this group's attitudes, diffusion theory does shed light on possible implications of these attitudes for the spread of new media knowledge and use.

Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system." (Rogers, 1995) Because the messages being communicated concern a new idea, some degree of uncertainty is involved; information is the means of reducing that uncertainty. The innovation may or may not be "objectively" new; certainly, many aspects of "new media technology" have been tested before, with varying degrees of success. What is important is that the innovation be perceived as new. The recent flood of articles, in both the trade and scholarly press, certainly seem to position this technology as having an impact on journalists and journalism.

Individuals pass from first knowledge of an innovation, to formation of an attitude toward it, to a decision to adopt or reject it, to implementation, then to confirmation of that decision. (Rogers, 1995) Innovativeness is the degree to which a person (or organization) is relatively early or late in adopting new ideas. Innovators, the first 2.5 percent to adopt, are venturesome, excited by the possibilities of new ideas and eager to try them out. Behind them come the early adopters, who tend to be more closely socialized to the norms and values of their group and tend to be its opinion leaders. They are followed by the early and late majority and, finally, by the laggards.

Diffusion theory also incorporates the idea of a social system, bound by a common objective and constituting a boundary within which an innovation diffuses. Opinion leaders are at the center of interpersonal communication networks, allowing them to serve as social models whose innovative behavior is imitated by others in the system; indeed, the heart of the diffusion process, according to Rogers, consists of interpersonal exchanges and social modeling between the people who already have adopted and the people they, in turn, influence. (Rogers, 1995)

Stated in terms of diffusion theory, our Champions of Change -- while they may not currently be using new media technology as they define it -- are likely to become the early adopters, and perhaps even the innovators, of new media technology. They are the people near the start of Rogers' s-shaped diffusion curve. Innovators are eager to try out new ideas and willing to accept the uncertainty that goes along with anything new. In the words of one of our Champions: "The possibilities are unlimited if we approach them with vision, creativity and a desire to put new media to uses that will benefit society." Seven of our 15 Champions of Change are in their late teens or 20s; as they move through their first jobs in the industry and assume positions of increasing authority, they seem likely to become the opinion leaders who take on "early adopter" roles and help guide other journalists through the twists and turns on the road ahead.

The early and late majority of adopters are more apt to come from our other factors. These people, who form the slope of the diffusion curve, are categorized by Rogers as somewhat more skeptical about change, willing to go along but also more deliberate in their evaluations of its impact. The factors focus on different concerns -- ranging from manipulation to a widening knowledge gap -- but only in a very few individual cases do their reservations seem likely to stand in the way of eventual adoption. Even our Pessimistic Prophets, who express the most profound doubts about new media technology, are unlikely laggards. Despite their misgivings about new media technology, they also seem to accept its inevitability and even admit to excitement about at least some of its potential aspects. In the words of one Prophet, explaining his strong disagreement with Statement 39, that interactive media will make journalists obsolete: "Journalists convert data to information. They will be needed."

Several additional aspects of diffusion theory are interesting in light of this study, as well. For example, Rogers proposes that innovations likely to gain a more rapid acceptance are those perceived as having a high relative advantage, or as being better than the idea they supersede; journalists excited about the changes inherent in the technology, then, may see it as offering them a better way to get information to (and from) the public. Innovations with a high compatibility with existing values, past experiences and needs of potential adopters also have an advantage. Journalists who perceive new media as potentially expanding the number of viewpoints in the "marketplace of ideas" -- for instance, our Champions of Change and Laid-Back Liberals, who disagreed (- 3, z=-1.19, and - 4, z=-1.66, respectively) with Statement 21 ("New media potentially could decrease the number of viewpoints") -- may be more likely to embrace them than others, such as our Pessimistic Prophets, who are gravely concerned with technology's potential to be manipulative.

Of interest as well is the proposition that mass media channels are often most important for informing people about an innovation, while interpersonal channels are more important in persuading someone to adopt a new idea. (Rogers, 1995) The transfer of ideas is most effective when participants belong to the same groups or are drawn by the same interests -- those who, for instance, read the same trade publications or scholarly journals. Shared meanings and mutual language mean communication is likely to result in greater knowledge gain, attitude formation and change, and overt behavior change. (Rogers, 1995) When we talk about journalism students and educators as the client group for an innovation, however, mass media and interpersonal channels may overlap. The people who disseminate information (be it to students or to the public) are themselves a primary reference group for those in their own industry. Thus, they may perform both a knowledge function and a persuasion function.

This study has considered the attitudes toward the new media among future journalists and current journalism educators, all of whom have been besieged with information about these technologies and now must play a central role in the further dissemination of additional information. It has attempted to increase our understanding of the concerns that may shape not only journalists' own decisions to adopt these innovations but also the way they structure communication about evolving technologies to their audience.

"May you live in interesting times," say the Chinese, offering in that single statement both a blessing and a curse. Journalists are part of an information industry that lies at the very center of sweeping changes, and the way they approach those changes will affect our entire society. Like it or not, journalists are, in many ways, in the driver's seat on this high-speed highway. It promises to be an interesting trip indeed.

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TABLE I

STATEMENTS AND FACTOR Z-SCORES

STATEMENTS	FACTOR ARRAY Z'S 1	2	3	4
1. The possibilities created by new media technology are exciting.	2.2	1.3	.5	1.7
2. Soon we'll be in a situation where we'll have access to any information we want instantly, updated continuously. When we pick up the morning paper in the afternoon it's outdated. That won't happen with new media.	.6	-.4	-.7	1.5
3. We have to struggle with the question of whether or not just because we can deliver advertising to more targeted individuals than ever before, should we do it and will people stand for it?	.5	.7	.5	.2
4. There are some serious ethical problems related to the new media technology.	1.1	2.1	.7	-.3
5. People in the media will have to think more about the content of of news and less about the specific means of telling the story.	-.4	-1.1	.3	1.3
6. New technologies will make it possible and necessary for those those in the news business to incorporate feedback into what they produce.	1.3	-.1	-.3	1.7
7. New media technology will eventually eliminate my job.	-1.8	-.9	-1.7	-2.1
8. New media technology developments will help to improve my quality of life.	.7	-.8	-.2	1.5
9. For the vast majority in the real world, new media technology is going to be something they'll read about but it's not going to affect their lives to any great degree. At least not for 5 to 10 years.	-.8	1.0	1.9	.5
10. I'm truly ambivalent about the new media.	-.8	-.3	-.1	-.9
11. I have a strong sense of being able to absorb less and less of the increasing amount of information available.	.2	1.0	-.4	-.9
12. The new media won't fundamentally change the way we communicate and gain knowledge.	-1.3	-2.2	.6	-1.0
13. The ability to select only what you want may result in missing salience cues about the world. For example, if you want to read only sports, you may at least glance at the front page and note the headlines, thereby getting some other news.	.6	1.2	1.4	.7
14. I think the new media will create a huge generation gap as to how we conceive knowledge and what knowledge means.	-.0	.7	.4	1.0
15. The new media will call for different ways of teaching people how to write and work for the media.	1.8	1.0	.8	.9
16. I am not concerned about the potential for manipulation.	-.4	-2.4	-1.0	-.9
17. The new media are more authoritarian. Huxley and Orwell thrown into one. You won't even realize you're being controlled or manipulated.	-.9	.8	.1	-.7
18. I would guess there is a big difference in perspective about the new media depending on age.	.9	.3	1.7	1.0
19. A tool is something you manipulate; technology manipulates you. That's a danger of new media.	-1.0	1.1	-1.6	-.1

20.I'm apprehensive about the future.	-.6	.5	-.8	-1.1
21.New media potentially could decrease the number of viewpoints.	-1.2	.5	-1.7	.8
22.Privacy is not a problem with the new media.	-1.4	-2.0	-1.6	-.8
23.The government should not regulate new media.	.2	-.7	.7	-1.1
24.New media technology won't have much influence on entertainment	-1.5	-1.4	.1	-.9
25.New media technology can help create a better sense of community.	.7	-1.3	-1.1	1.9
26.If, as author/journalism John Katzenbach says, "information is the currency of journalism," you had better learn to operate to operate the ATM, because there often isn't a teller anymore.	.8	.2	-.1	.1
27.From the consumer's standpoint, the information future is rich with choice and possibility. For journalists, it is much more troubling...people won't need a mediator anymore.	-.9	-.8	-.4	-1.2
28.New media technology will be a lot harder to introduce than anyone expected.	-.7	-.3	.4	.2
29.User control is one of the most attractive features of interactive media, permitting people to retrieve what they want when they want it.	1.7	.6	1.2	.4
30.It is important for the future of the newspapers that they try to exploit their information franchise to develop products for readers that use existing & emerging electric technologies.	1.7	.3	-.1	.6
31.If newspapers grasp the inherent values of the changed technology, they can become even more important than they have been because they are the databases of local communities.	1.5	.7	-.1	.4
32.When I look at where we were 10 years ago and where we are today, I don't know if anyone could have imagined where we would be with technology and surely it's going to be like that in the next 10 years.	.7	.5	.6	.8
33.I want electronic interaction to be as individualistic and anarchic as it has been.	.4	-.3	1.1	-.5
34.Education is lagging technology in general.	.7	1.4	.8	.0
35.The new technologies are not providing new information; merely the same stuff in different packages.	-.4	-.1	.9	-1.5
36.Having been exposed to the new media technology, I don't want to do without it.	1.0	.0	.1	.2
37.What now passes for the information superhighway is merely a slogan in search of a mission.	-.2	-.1	-.2	-.9
38.As television becomes more democratic by offering greater choice, it no longer will provide a common forum for the sort of pluralistic debate that helps make a democracy work.	-.5	.6	-1.1	-.8
39.Interactive media will make journalists obsolete.	-1.7	-1.5	-2.0	-1.0
40.Only computer-literate people will be able to use emerging interactive media.	-.9	.2	.6	.7
41.The new TV could bring families closer. Because it would so many of our entertainment and informational needs at home, family members should find themselves gathered in the home more often.	-.2	-1.6	-1.1	-.1
42.The new media will narrow the information gap between the rich and the poor.	-.5	-1.3	-1.5	-1.2

43.Interactive media are impersonal and depersonalizing.	-.8	1.0	-1.1	-1.7
44.Interactive media are elitist.	-.4	.8	1.5	.3
45.Children are more comfortable with computers than are adults.	.9	.1	1.3	1.3
46.The capabilities of interactive media are over-rated.	-1.3	.1	-.4	-.6
47.Increased microcasting may ultimately spell extinction for the big commercial networks.	.3	.1	-.7	-.6
48.New media technology will deepen divisions among the social classes.	-.2	.9	1.6	1.1

Electronic Newspapers: Toward a Research Agenda

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Abstract

In the mid 1980s, when early electronic newspapers failed to live up to their promise, industry analysts declared them dead as a mass medium. But just 10 years later, "E-papers" are once again receiving much media hype, although little academic research has been done on them. This paper reviews academic literature, trade articles, online discussions, and personal communications with industry leaders to build a foundation for the academic study of electronic newspapers. The emphasis is on basic research that will address industry needs as E-papers reemerge. The following scholarly areas are reviewed with initial research questions formulated for each section:

- History
- Network Culture
- Media Sociology
- Management and Economics
- New Media Elements
- New Content Features
- Information Processing
- Commercial Messages
- Ethical and Societal Concerns
- Legal and Regulatory Issues

Given length constraints, this paper offers a broad perspective but only a cursory review of an extensive literature. Bibliographic resources are offered for further reading.

Introduction

In the early 1980s, industry analysts predicted the rise of information services and development of new media would make electronic newspapers the answer to declining penetration rates and increasing costs (Marvin, 1980). By the mid-1980s, the newspaper industry and other media groups had invested over $100 million in online publishing ventures (Pryor, 1994). But by 1986, weak subscription bases led most newspapers to discontinue their efforts. Analysts and publishers agreed it was clear electronic newspapers would not "be a threat to either newspaper advertising or readership in the foreseeable future" (Greenwald, 1990; Hester, 1982).

But in less than 10 years, the electronic newspaper industry has seen a resurgence. Approximately 75 newspapers currently are online, with more coming onboard each day. The increase in all interactive services, from 42 in 1989 up to 2,700 today, has fueled confidence and excitement among newspapers (see Fitzgerald, 1994; Glaberson, 1993, 1994a,b; Haddad, 1993a,b,c,d; Lail, 1994; Markoff, 1993a,b,c,d,e; & McNaughton, 1993a,b,c, among others). Despite this renewed hyping of electronic newspapers, however, experts disagree about the appropriate technology and publishers are trying to discover what content and format will gain audience acceptance. Ken Lewis (1994) suggests, "The net is 5,000 niche markets. There's plenty of room for journalism but very little room for traditional newspaper coverage. Newspapers have evolved to fit paper-based delivery. The net will follow a very different course." But no one has yet ascertained exactly what that different course will be.

In part, what remains unclear is how the new electronic newspapers differ from the earlier failures, how the audience for these services has changed in the past 10 years, and what their broader social, legal, policy, and ethical implications are. This paper reviews these issues and proposes a wide-ranging research agenda to study electronic newspapers (E-papers).

The History of Electronic Newspapers

Electronic newspapers were made possible through the development of videotex technology in Great Britain in 1974. Videotex merged existing computing and communications systems to allow the interactive transfer of information to be displayed on a home television set (Sigel, 1983a). But videotex was launched on a supply-push market: the technology arose not from the desire to satisfy a consumer need but as a new combination of existing technologies for which consumer needs would have to be manufactured (Schneider et al., 1991).

Most videotex pioneers assumed consumers' primary demand would be for information retrieval services (Meyer, 1988; Paisley, 1983). But in 1981, only two years after the British Broadcasting Corporation launched the first videotex system, they faced losses of over 4 million pounds per quarter (Rogers, 1986; Sigel, 1983b). The BBC's 13,000 subscribers used the information service almost exclusively to pass messages and play games, not for information (IRD Report, 1983; Noll, 1985). Other European countries developed videotex systems, only to have them stagnate over a similar lack of interest in information retrieval (Paillart, 1989; Palmer & Tunstall, 1988).

The most successful European application to date is the French Teletel system, in part because the lack of a regulatory framework allowed the system to develop spontaneously in response to consumer demand (Branscomb, 1988; Charon, 1987; Petrella, 1988). With only 4% of connect time spent on obtaining general news and information, the

French E-papers provide little news but many user services, such as chat boards, e-mail, reservation services, stock market simulations, and polling services (IDATE, 1987).

Videotex development in the United States began in 1978; the first commercial service, The Source, came online in 1979. Although the company president predicted that in six months the service would "be in the home like Tupperware," by 1982 the service had only 20,000 subscribers. Analysis of service use on The Source revealed e-mail was the most popular feature, followed by bulletin boards, then chat lines. News was a distant fifth (Tydeman et al., 1982).

Concurrently, newspapers launched independent electronic publishing efforts in what many viewed as a defensive investment (Mosco, 1982). But Knight-Ridder's Viewtron service and Times Mirror's Gateway both collapsed, with estimated losses of $50 and $30 million, respectively. At the end of a two-year Associated Press trial of 11 prototype E-papers, project directors concluded videotex was a technology in search of a demand, and what that demand might be was far from clear (Hester, 1982).

General information services also were failing during this time. AT&T, Chemical Bank, RCA, Citibank, and NYNEX lost hundreds of millions over failed videotex efforts (Aumente, 1987; Tyson, 1989). Videotex was no longer considered a mass medium but a niche market for special interest groups (Broadcasting, 1988; Noll, 1985). But in the late 1980s the proliferation of home computers persuaded more companies to launch information services, most with user-friendly, menu-driven command screens. Prodigy, GEnie, Delphi, and America On-line joined CompuServe, which in 1989 was considered the industry standard, with 400,000 subscribers and $36.5 million in annual revenue

(Truet & Hermann, 1989). Currently, these five services have over 2.6 million user accounts, with about 5 million total users (Table 1).

The user profile is changing from that of the young, male "electronic innovator" of the 1980s. About 35% of Prodigy users are female, and 12% are over age 55 (Steinberg, 1993). Computer penetration has plateaued at about 33% of households; 13% of U.S. households have modems, although that number is rising as more systems come packaged with modems (see Figure 1; Resnik, 1994a). Because of their market penetration and relative ease of use, newspaper companies are developing working relationships with established services, using the information service infrastructure to support and promote their publishing efforts (Reilly, 1993). Currently, these systems have over 60 papers online (Tables 1 and 2).

Other papers are taking advantage of the reach of the Internet, which originated in 1969 as a U.S. Department of Defense experiment to allow communication among scientists. During the 1980s several other communications systems were linked, and the Internet now comprises networks of academic, military, government, and commercial entities in the United States and 40 other countries (Cooke & Lehrer, 1993; Wagner, 1994). The audience is 20 million users, with one million more coming onboard each month (Anthes, 1993; Elmer-Dewitt, 1993).

History: Research Directions and Questions. Trying to develop a research agenda to study the history of electronic newspapers highlights the problem of trying to capture historical electronic content. Because the media content itself is not available, studies must rely on the few primary materials available, i.e., data from mainly trade articles, beginning with videotex in the 1980s. Somewhat more academic work was done in Europe; tracking and translating these works would provide a better background for researchers here. Combined with archival work and interviews with those involved in the early efforts, the data could address several questions. What market research was conducted? How was it interpreted by decision makers?

How much did the technology drive the content? How much sharing of information occurred, both intranationally and internationally? Was information shared cross-nationally as videotex developed? What role did governments and policy development play in the history of videotex and electronic newspapers?

Network Culture

Many early adopters of electronic newspapers as well as those delivering newspapers online are steeped in the culture of the electronic web, the milieu in which electronic newspapers operate. The norms and rules are so well codified that the CompuServe information service offers novice users instruction in "netiquette" (Compuserve, 1994). Those who violate "netiquette" are subject to harsh attacks, called *flames*. An analysis of this cultural ethos yields the following observations.

Most network users follow the adage "All information wants to be free" (Cooke & Lehrer, 1993) and have an aversion to commercial elements and messages. They see the Internet as a haven from advertisements and commercial aspirations, as the means of building a new and better electronic world (Online, 1994). This world benefits from anonymity, leveling of social power, gender and physical transparency (users are identified by user-name only), and the free sharing of information/assistance. Although some information services are commercially supported, users of these services complain about the intrusion of commercial elements and develop strategies to block them out when they can, or complain about them to the service provider when they cannot (CSAE, 1990). One offense almost guaranteed to bring on flaming is to *spam* a discussion group, i.e., to spread an unsolicited commercial message. Spamming derives from the image of a can of Spam dropping onto a fan, spreading "meat" everywhere.

Members of the net are also suspicious of those who sell newspapers online. Much online discussion questions whether journalists actually add value to information by delivering it in ways we can digest and use (Online, 1994) or whether they serve as unnecessary, perhaps biased, filters (Elmer-Dewitt, 1993). Those who envision the net building a more democratic world see users as information gatherers and sharers who do not want or need a journalist to gather, shape, and disseminate information for them.

Information is made widely available in the Internet culture. Gophers, the World Wide Web (WWW), WAIS (Wide Area Information Server), FAQs (Frequently Asked Questions), News Groups, and Usenets all offer vast and detailed information without charge (Sachs & Stair, 1994; see Levin, 1993, for a glossary of terms). Computer programs called intelligent agents or knowbots, which emulate human intelligence, search resources and retrieve information. These programs can compile information from each day's news to meet personally defined needs (Online, 1994). Combined with the fact that many users have free access to the Internet through work or unlimited access through a nominal monthly fee, the availability of knowbots that can scan wire service copy offers a futuristic but not inconceivable alternative to the newspaper.

Some analysts project the Internet, a non-linear and increasingly multi-media environment, will become predominantly populated with younger users (Online, 1994), which may provide an ideal market for newspapers struggling to attract younger readers. The "youthanizing of the Net" may be exaggerated, but research does suggest younger users prefer computer-driven information delivery (Catlett & Brooks, 1994; Thompson, 1993) and have an affinity for electronic newspapers they do not have for print counterparts (Brooks & Kropp, 1994; Hammer & Kennedy, 1993).

Network Culture: Research Directions and Questions. *Ethnography and ethnomethodology should be used to obtain the emic meaning of and map the rules governing Network Culture. Do longstanding or confirmed members of net worlds hold different attitudes toward E-papers? How do Netters define value added to information? to commercial messages? Do responses differ for the range of forms of commercial messages (intrusive display ads to product announcements to product forums)? What price/billing structures will the Network Culture accept for electronic newspapers? Will Netters accept a paper with advertising or prefer ad-driven publications to subscription-driven ones? Will Netters accept any billing procedure at all or balk at bills for information services? How will the culture fare in the face of commercial developments?*

Media Sociology

As electronic papers develop, changes may occur in how news content is defined. Some argue that journalists will become mere information providers (IPs) on networks and may lack traditional journalistic ideals (presstime, 1993). As journalists spend more time formatting or processing electronic information, they may have little opportunity to exercise journalistic enterprise (Abernethy, 1991; Hester, 1982). Additionally, electronic papers hire "editors" whose main job is to convert the printed paper to the electronic medium, a mechanical effort derisively termed *shoveling*, with the product known as *shovelware* (Online, 1994; Thalhimer, 1994). Both shoveling and the collection of raw electronic data to be shoveled could diminish active news judgment, decreasing the value of newspaper products and increasing the volume of news. Increasingly, software is being used to automate the shoveling process, compounding these effects.

To some extent news judgment is a consequence of economic constraints. Newshole size is linked to the amount of advertising available. Electronic newspapers promise greater story length and breadth of coverage because the size of the newspaper is limited only by the energy and time needed to produce it, not by a page limit (Mason, 1993). No longer will finished stories be cut to fit space requirements. News judgment, then, may become a matter of hierarchically arranging unlimited access to stories, rather than a gatekeeping process (Isaacs, 1995).

Many electronic newspapers are providing unedited content to users (Christopher, 1994). E-papers offer not only wire services, but also PR Newswire and Businesswire, news release delivery services. *Access Atlanta*, the electronic counterpart of the *Atlanta Journal/ Constitution*, is considering a service to run unedited news releases of local interest (personal communication, Brian O'Shea, 1994). Traditionally, journalists disdain news releases, although they use them judiciously when information is validated (Berkowitz, 1993; Pincus et al., 1993; Turk, 1988). Offering wire and release services negates the added value derived from journalistic judgment and editing. The trend toward publication of unvalidated material is cause for concern, but it is also in keeping with Network Culture.

The rapid move of electronic newspapers toward multi-media information delivery will require newspaper staff to be proficient in video and audio news processes (Moeller, 1995; Reilly, 1993). Alternatively, newsgathering may be jobbed out to newsgathering syndicates with multi-media skills. Stories would be available digitally for incorporation into electronic newspapers (Tewlow, 1993).

Story notes and data can be stored online and made available to readers. Some members of the Network Culture call for access to reporter's notes to make reporters more accountable, both in story accuracy and in claims that journalists add value to information through the reporting and editing process. Others claim access to reporter notes and data online will enable fuller coverage and offer readers a more interesting story (Online, 1994).

Interaction with reporters and fellow readers is a highly touted feature of electronic newspapers. But readers with access to story notes may question reporters about their interpretation and selection in creating news stories (Dalton, 1993). This interaction could dampen a reporter's willingness to deal with controversial topics that might generate an overwhelming e-mail response, such as that received by managing editor Jim Gaines of *Time* magazine when the magazine ran the digitally altered photograph of O.J. Simpson on its cover (Wolff, 1994). Even noncontroversial coverage can generate a flow of mail that affects the work schedule. James Coates, a correspondent for *Chicago Online*, spends 4 to 5 hours answering the 250 pieces of e-mail he receives each week as a consequence of including his e-mail address at the end of each column (Moeller, 1994). Some critics contend this interaction with readers will restrain reporters from doing their real work. Instead of gathering news, reporters will be preoccupied with schmoozing the reader, especially when that reader has the upscale demographics not of the average newspaper reader but of the average computer user (Online, 1994; Wolff, 1994).

Others point out that reader-generated information comprises the majority of newspaper content, and directing reporters to respond to their e-mail will simply put them in better touch with their sources (personal communication, Dennis DuBe, Apple e-World, 1994; Wilcox, Ault, & Agee, 1992). Conceivably, the newspaper would be more relevant and contain more local information derived from electronic talk.

Media Sociology: Research Directions and Questions. Both the current practices of journalists involved with E-papers and the views of journalists about the prospect of working for an online newspaper should be explored. Participant observation, depth interviews, and focus groups could address the following questions. Do journalists perceive electronic newspapers as affecting the values and practice of journalism? How will a potentially unlimited newshole affect news judgment of reporters and editors? Will journalists accept the added workload of responding online to reader messages? How will this interaction affect reporting? How will computer aided research and reporting (CARR) affect news values? Will the converging of reporters from various media into multi-media news syndicators occur? Would such a convergence be healthy for the profession?

Management and Economic Issues

Determining demand for futuristic products is more difficult than projecting the ability to supply such products (Schneider, et al., 1991): "As a result, efforts have focussed on what is technologically possible rather than what is demonstrably needed" (Curien & Gensollen, 1987, p. 142). The ability to deliver a product does not make that product viable, however. Presumably, electronic newspaper development today is not driven by the panoply of new technologies but by the projected demand for innovative news services (Urban, 1985).

Some argue that research on consumer demand is best done by directly testing the market. Randolph Charles, director of marketing for *Newsday* and *New York Newsday*, calls this "placing many small bets . . . [you] try to get your toe in lots of different pots of water as you move into the new world" (Resnick, 1994a). At the same time, companies are addressing a major objective uncovered in a national survey of the industry: gaining experience with electronic delivery of information (Kelsey, 1993).

Assuming electronic newspapers find a lasting place in the market, media managers face a number of challenges. Many questions have surfaced concerning staffing (Online, 1994). For an existing newspaper, the number of additional staff needed to go online and their skill levels are still uncertain. Companies must define the status and title to be given to editors who convert news copy from print to online format and to researchers who are more than librarians but often less than reporters (Isaacs, 1995; Leslie, 1994). As electronic newspapers become multimedia services, staffing in online divisions may become more expensive and problematic as tasks shift from "shoveling" print copy to creating a publication that is distinct in look, purpose, and sophistication (Online, 1994).

Media managers wrestle with questions of relative cost, pricing structures, and delivery when comparing printing presses with electronic service (Fidler, 1992; Marvin, 1980; presstime, 1994). If a modern version of videotex emerges as necessary for user satisfaction, the cost of such an information appliance must be covered, either by the individual user or by the information supplier. It remains to be seen how most newspapers will deliver electronic product to subscribers. Electronic delivery contracted with a commercial server provides a pool of potential subscribers, an established marketing program with name recognition, and an established billing system. Some papers, like the *Chicago Tribune*, have bought substantial shares in the commercial services that carry their E-paper, thus increasing the concentration of ownership among the information and media industries (Moeller, 1994).

Alternatives include creation of a local bulletin board service (BBS) or delivery through a World Wide Web server (WWW) on the Internet (Online, 1994; Resnick, 1994a; Rosenberg, 1993). The Internet's appeal to newspaper publishers is partly economic: while commercial services often get up to 80% or more of connect-time revenue, Internet costs are associated with original equipment and software outlays. With commercial versions of Netscape and Mosaic, web browser programs, navigating the Internet is relatively easy and cheap, even for computer neophytes (Levin, 1993; Markoff, 1993c; Pope, 1994; Strom, 1994). Web browsers now enable highly formatted, multi-media publications to be accessed on the WWW. Currently, 16 newspapers publish electronic editions on the Internet (Table 2), but the availability of Netscape and Mosaic is expected to make that number jump (Andreeson & Bina, 1994; Resnick, 1994a).

Management and Economic Issues: Research Directions and Questions. *Interviews with industry leaders and with media economic analysts are needed to define the dynamic exchange that takes place during production of E-papers. Content analysis of financial papers would help establish which formats and channels of delivery are economically viable and provide a base for the following questions. What do users want and how much will they pay for what they want? Are electronic ventures actually cost-effective methods of gaining experience and market research data? Has proprietary market research been done? Will the Internet serve as a viable alternative to commercial services and local bulletin boards? Will special information appliances be necessary for electronic newspapers to prosper? How will staffing be determined and are managers planning for increased sophistication of electronic staff as online publications evolve? How are managers assessing the relative advantages of commercial services and Internet or local BBS service? Will increasing concentration of ownership of news services with traditional media conglomerates affect the flow and content of news?*

New Media Elements

> Picture this, Doug: You see on your screen what looks a lot like today's newspaper page. You move your mouse to the photo, click, and presto: full motion video and CD quality stereo sound. Now, you move your mouse to the fact box, click, and presto: All the facts. (Carlson, 1994)

Such a multi-media newspaper is not a figment of the future; it is being delivered now by a number of electronic newspapers. The following characteristics have either been implemented or are projected to arrive in the next several years: moving images, animation, sound, voice recognition, voice generation as text is read to the user, switchable modality from multi-media at home to audio-only while commuting, and an array of interactive elements for navigating the publication (Bender, 1993; Christopher, 1994; Grossberger, 1994; Reilly, 1993).

Currently, the device for delivering these elements is the computer work station. Roger Fidler, director of Knight-Ridder's Information Media Design Laboratory, believes browsing capability and flat panel technology are the keys to audience acceptance, with newspapers better situated to offer multimedia news delivery than the electronic broadcast media (Fidler, 1992; Gilder, 1993; Markoff, 1992; Mason, 1993; Morton, 1993; Newsweek, 1993; presstime, 1993). But Michael Conniff, president of an interactive company and former senior editor of an electronic market service, believes "screenphones" are the only terminal capable of driving the market (Coniff, 1992, 1993a). The key question is whether a single-use machine is viable in the multipurpose computer age (Aumente, 1994).

Others argue that electronic news will be delivered in multimedia format via a smart version of the television, an appliance with a considerable loyal following. Perhaps the most intriguing medium is the thick, paper-like sheet that serves as the touch-screen display conceived by researchers at the MIT Media Lab (Online, 1994). MIT researchers are emulating the physical advantages of print newspapers because "crushed trees smeared with ink" enjoy highly evolved ergonomic virtues, such as size, portability, and flexible searching. The print paper is readily controlled by the reader; as it is scanned, folded, and clipped, the reader engages in a selective information search based on interest, leisure time, and reading ability.

Researchers at Knight-Ridder's Media Information Laboratory base their format on the paper model of the newspaper because they believe sequentially turned pages provide a "bridge of familiarity" to readers. They argue that button clicking and jumping through the content requires readers to acquire unfamiliar navigation skills rather than making use of the pagination skills they have already acquired (Kleiner, 1994). What most researchers do agree on is the need to make the new multimedium equally flexible for different ages, interests, and reading levels through features like personalized versions or routing the paper based on demographics (Bender, 1993).

The medium will evolve as technology develops. Certain of the multi-media elements may be more appealing and useful than others, and certain elements may conspire with content features to win a place in the market (Urban, 1985). The device that prevails for delivering electronic newspapers will reconcile technology, price, and ergonomic factors. Among the more elusive ergonomic factors, mechanomorphism may emerge as a new, but crucial factor. Mechanomorphism is the tendency by a user to apply the attributes of a medium to the content being delivered by the medium (personal communication, S. A. Shamp, September, 1993). Addressing this phenomenon to the advantage of the medium and the user will be a subtle process, not unlike computer company efforts to cultivate distinct characters and personalities for Macintosh and PC machines.

New Media Elements: Research Directions and Questions. To address many of these new media elements, quasi-experimental methods are needed to determine what users like and regularly use among the array of media elements. Which of these features, if any, are appealing or important to subjects? Which characteristics are most popular with *users? Which would generate loyalty to a newspaper? Will readers acquire new skills as they adopt the new medium, or will the adoption process be more rapid if more familiar skills such as pagination are used? For which demographic groups do these elements matter most? young readers? female readers? In which settings are which elements most valued?*

News Content Features of Electronic Newspapers

Three groups of unique content features arise in electronic newspapers: accessibility, customized information, and quality of content. Electronic newspapers serve as gateways to information beyond the copy offered by the paper. One can jump from most electronic papers to electronic versions of the "yellow pages," to chat groups online discussing special topics, to wire and news release services, to home shopping. Access is also available to stories in the newspaper's morgue, related stories on a topic, stories buried in potentially vast electronic back pages, stories in other papers, and to newspaper databases such as clip files, survey data, and reporter's notes (Reilly, 1993). Finally, electronic newspapers offer readers access to reporters and editors through e-mail.

Customized information available through electronic newspapers includes personalized news using programs like NewsClip, Farcast, News Cite, and Journalist (Rosenberg, 1993). Such personalized newspapers are whimsically referred to as the "Daily Me" (Bender, 1993; Conniff, 1993b; Haddad, 1993c; Husted, 1992; Mason, 1993). Other custom features include advertisements tailored to the user's demographics or triggered by previous activity online (see Legal and Regulatory Issues for implications). The more mundane but popular customization is the custom search of classifieds. Users can search precisely through classified ads, save search parameters for subsequent searches, and call up new ads meeting search parameters.

The unique or enhanced content elements in electronic newspapers are wide ranging. Management at *Access Atlanta* believes users want highly localized news such as school menus and Parent Teacher Association newsletters (personal communication, Brian O'Shea, 1994). Given the potentially unlimited newshole, this depth of localization is feasible for online services; given search capabilities, such information can be readily accessed.

Just as the medium enables extensive information for defined audiences, it also offers immediacy. Immediacy is limited only by the constraints on labor to update stories as they unfold (Online, 1994). When Prodigy offered up-to-the-minute poll results during the 1992 elections, it received more incoming traffic than the nationwide system could handle (Prodigy Newsletter, 1992). Sports and financial news are obvious prospects for this news content feature. For example, E-papers could match the immediacy of ESPN or sports radio shows but provide fuller coverage. The resulting hybrid could combine video highlights of unfolding action with details such as box scores that are not available currently until a paper is printed and delivered to the sports fan's home.

As electronic newspapers go through their second manifestation, the ongoing debate about whether newspapers should become a higher class medium or remain a mass medium has come into sharper focus (Bogart, 1993). Arguing that electronic newspapers should be a venue for longer and better-written stories, Katz (1994) calls for better writers to be hired and retained through high compensation and time to write well. An elite audience with time, money and skills to access the paper exists online as a likely market for deeper, better news writing (Franklin, 1992). Anecdotal data indicate many online subscribers buy an electronic paper for its quality coverage or its top columnists, justifying devotion of greater time and expense to better writing. Given the high socio-economic status of subscribing households and the ability to target commercial messages, electronic newspapers could become more magazine-like in content and in advertiser base than their hard copy counterparts.

Based on the European experience with videotex and competing news sources such as television, print newspapers, news magazines, and radio, some analysts question whether E-paper content will comprise much hard news. Bogart contends most people will use the information highway for entertainment, not knowledge (Freedom Forum, 1993). DuBe describes Apples' e-world as a melding of news content with many other elements, not the least of which is the opportunity to interact with others (personal communication, Dennis DuBe, Apple e-World, 1994). Ironically, this new formula resembles the time-tested one of StartText in Fort Worth, Texas (Online, 1994; Piirto, 1993).

News Content Features: Research Directions and Questions. Use of survey, interview, and computer logs of actual user behavior would determine which of these content elements appeal to research subjects. Are subscribers interested in using newspapers as gateways to more information resources? Which elements diminish in appeal after their novelty wears off? Do subscribers want and use a two-way communication channel with editors and reporters? Would traditional media functions such as surveillance and community building be diminished by news dependence on a "Daily Me" newspaper? What mix of entertainment and news will attract subscribers while allowing the news media to fulfill their primary societal functions?

Information Processing

A number of issues arise concerning how users can and will process information in the new medium. Some of this work is comparative, including an early study comparing videotex with a talking newscaster (Edwardson & McConnell, 1985), and more recent studies that include print, television, and computer presentation of information (Crigler et al., 1994; Facorro & DeFleur, 1993; Thompson, 1993). One groundbreaking study assesses not just computer presentation, but more specifically, electronic newspaper presentation of information (Brooks & Kropp, 1994).

Unlike experimental work, viewer behavior research takes a more "macro" approach to the viewing process by documenting what people do when viewing. Behaviors such as channel switching, remote muting, conversation, and hobby activity are studied. Some of these data are collected using eye-tracking devices, while other studies use more naturalistic observation (Abernethy, 1991; Anderson et al., 1986; Elton & Carey, 1983; Krugman & Shamp, 1992).

In newspaper research, some analogous work has been done (Bogart & Tolley, 1988; Garcia & Stark, 1991; Rice, 1985; Smith, 1989). With the development of E-papers, which cross media boundaries (see New Media Elements above), far more work needs to be done on how users view/read an electronic newspaper. This new information processing task is called navigation because it involves the processing of icons to travel through screens of electronic territory in the publication (Online, 1994; personal communication, S. A. Shamp, 1994).

Navigation is a learned behavior, somewhat different from reading a paper or watching television. Individual and demographic differences may be important factors in navigational proficiency. The design of the electronic paper will also be critical in how information is processed and what information receives attention (e.g., editorial versus commercial; lead story versus special interest; main news versus database information).

Moving beyond effects on individual users, broader media effects should be explored. For example, navigating an indexed electronic publication may change some theories of media effects, such as agenda setting. Different cues may exist, such as index order or arrangement of icons (Fico et al., 1987), that set news priorities or agendas. Factors in persuasion theory, such as involvement, may need similar reconsideration in this more interactive, merged medium. Differences between print and television effects may be masked or compounded.

Information Processing: Research Directions and Questions. Electronic newspapers lend themselves to a detailed log of user activity (stories and ads viewed, for example). Combined with surveys, experiments, and in-home naturalistic observation, these logs could be used to answer the following questions. Will modality interact with demographic factors such as age, gender, and level of computer anxiety? How will navigational behaviors compare with browsing behaviors of news consumers? Will an online counterpart to zapping occur for electronic advertisements? Will electronic delivery of news affect how that news is perceived? How are memory, attention, information gain, and media preference affected?

Commercial Messages

Although print newspapers continue to be a major component of media plans for advertisers (Nowak et al., 1993; Resnick, 1994b), regional advertisers show little interest in electronic newspapers (Cameron, 1994). Nonetheless, online services are succeeding in attracting advertisers, which suggests electronic newspapers may soon earn advertiser respect. For example, Prodigy claimed 200 advertisers in six industries in 1992 (Target Marketing, 1992).

Electronic newspaper advertising will be just one of many new interactive advertising methods, such as direct mail disks, electronic "junk" mail, kiosks, sponsored games, and interactive home shopping (Breuckner, 1994; Stefanac, 1994b). How great a part of the online mix will be devoted to E-papers depends in part on advertising innovation and user behavior. Currently, advertisements intrude on the screen, either in a teaser box at the bottom or as a window taking up part of the screen. Users can select to see the advertisement, which means ads may attract only information seekers and may be copy heavy to meet information needs (Breuckner, 1994). Once an ad is viewed, electronic papers offer the advertiser a marketing advantage by making direct response/ordering features available.

Advertisement inquiries, ordering history, and other database information volunteered or garnered about the user can be used to deliver highly personalized follow-up ads online as well as online direct mail customized to the user's profile (Bender, 1993). Database and integrated marketing can reach remarkable levels through electronic means, levels that broach invasion of privacy (see Legal and Regulatory Issues below).

Two innovations in advertising offer disparate directions for advertising strategy (Laws, 1994). Multi-media advertisements are now possible; display ads may be activated to view full-motion video spots (Breuckner, 1994). In contrast to these compelling ads presented to all users is the concept of commercially sponsored electronic places. Like a McDonalds' playground or a Nike World, analysts envision these sponsored places as enjoyable, informative locations for exposure to and information about products provided by the sponsor and by other users (personal communication, Dennis DuBe, Apple e-World, 1994).

Public relations practitioners can feed news releases onto unedited local wire services as well as to deliver releases directly to the audience through PR Newswire. However, unedited releases may lack the credibility of editorial content (Cameron, 1994a, 1994b; Cameron & Curtin, in press), and it remains to be seen whether users distinguish between journalistic content and public relations releases in wire service sections of an electronic paper.

Another opportunity for public relations efforts are the forums or discussions among readers and journalists. The opportunity to rebut, praise, critique, or clarify a story will be enhanced by online discussion, although public relations people will probably be accepted as commentators only within limits. The public relations practice of monitoring stories on wires and within public-access databases where reporters make stories in progress available for real-time response (Thomsen, 1994) will be enhanced or hampered, depending on circumstance. Comments and corrections can be made before stories are run and may be made directly to a reporter's electronic mailbox. However, a breaking story could run online as soon as it is finished, dramatically cutting the lag time available for public relations staff to contact a reporter before a story goes to press. Once a story runs, it will experience error inertia as never before as it is electronically clipped and archived by subscribers and by reporters using computerized information gathering techniques (Feola, 1994).

Commercial Messages: Research Directions and Questions. Focus group and survey data could be used to answer the following questions. What factors would enhance the attractiveness of E-papers to media buyers? Will users prefer online commercial space to intrusive advertisements? Will commercially sponsored places inhibit information seeking and contribute to a loss of competitive edge? Experiments could test whether readers distinguish between journalistic content and public relations releases on electronic media. Tracking log files and online archives would provide case study data to answer the following questions. What are the effects of real-time response and is error inertia problematic? Will users tend to activate display ads to obtain the video version of the ad? Will users be information seekers actively clicking on advertisements offered in personalized boxes?

Ethical and Societal Concerns

New communication technologies emerge and are used long before their social impact is known (Cutler, 1990; Smith, 1980). Because they benefit those who are active information seekers, and information seeking corresponds with higher socioeconomic status (CECD, 1982; Cutler, 1990), some analysts are concerned E-papers will contribute to the information gap. The theory that information eventually trickles down to bridge the gap has not been well supported (Talarzyk & Widing, 1990). Taking an inexpensive medium and placing it on high-cost equipment may polarize class lines instead of developing the more democratic society envisioned by Network Culture (Gould, 1989; Husted, 1992; Marvin, 1980; Rogers, 1986). This polarization could extend beyond economic lines to those of technological capability and benefit recognition, requiring that people be trained in technology use and how to apply it profitably to their lives (Christopher, 1994; Freedom Forum, 1993; Willis, 1994). However, early predictions that electronic information media would contribute to the gender gap have not been borne out (Deveze, 1988; Meyer, 1988; Steinberg, 1993).

Some critics predict increased dependence on electronic networks will result in increased human isolation. Less opportunity for social interaction arises as electronic media increasingly are used for "chatting," instruction, shopping, and even telecommuting to work. Ironically, linking to the global net to form a global village may be concomitant with a decay of community and the loss of self in an electronic cocoon (Churbuck & Young, 1992; Dyrli, 1993; Gergen, 1992; Hargadon, 1994; Willis, 1994).

Some analysts believe the prominence of flame attacks and rise of computer sex boards is evidence that the isolated self expresses itself differently because the anonymity of the net erases the fear of reprisal (Chidley, 1994; De Lacy, 1987; Tempest, 1989; Veyron, 1985). This subject has been more widely studied in France, where 75 sex chat boards in 1987 accounted for 20% of total revenues although they formed only 5% of total service providers (Browning, 1988; Deveze, 1988; Moutet, 1986; Tedesco & Janssen, 1988). The anonymity of the net also creates an atmosphere conducive to the rise of computer crime, with the perpetrators benefitting from free access and almost unlimited range to their victims. Electronic newspaper providers have not been immune to computer virus attacks (Fitzgerald, 1988; Rosenberg, 1993a), and users have fallen prey to scams such as pyramid schemes and credit card theft. With the federal government's proposed Information Superhighway, the continued linking of information networks brings with it the possibility that users will be inviting criminals into their homes every time they read their E-papers.

The sophisticated, interactive advertising and customized consumer information databases available online also raise issues of increased consumer vulnerability to advertising techniques. These techniques may give advertisers an unfair advantage, at least until users develop an awareness of how to use this new technology. Some electronic advertisers have begun paying readers to look at ads, which raises ethical concerns over the legitimacy of this market research technique. Additionally, the use of unedited public relations news releases and the availability of sponsored places raise concerns over whether consumers will be able to distinguish between editorial and commercially sponsored information or if, in fact, a sleeper effect will take place (Cameron, 1994a).

Ethical and Societal Concerns: Research Directions and Questions. To some extent, the societal and ethical implications of E-paper *technology will only be known with time. However, interviews and surveys of E-paper providers could determine how they are addressing knowledge gap and stratification issues, if at all. Although the current literature indicates a gender gap does not exist, questions still remain about gendered use of this technology. Focus groups would be useful in determining if gendered differences exists both in use and in perceived application. Determining how the technology affects social interaction patterns is difficult, with longitudinal in-home observation studies the problematic method that might begin to address these concerns. Online surveys could be used to determine the experiences of providers and users with computer crime and what steps they are taking to protect themselves. Experiments could determine how seductive consumers find interactive advertising techniques.*

Legal and Regulatory Issues

Debate rages over whether the information highway should be subject to censorship in any form. Because many information services view themselves as more than common carriers, they delete obscenity and personal attacks from public messages. Geoffrey Moore, director of communications for Prodigy, insists "readers have no constitutional right to publish their views in a private medium" (Moore, 1990), whereas America On-line allows interrupts on live chat lines with messages looking for "Hot Housewives" (Ellison, 1991). As noted under Network Culture, most net users believe all information should be readily available, with the notable exception of commercial information, and they complain about any form of censorship (Berman & Rotenberg, 1991; Card, 1991; Lacy 1991; Zachmann, 1990).

The ability of advertisers to gather detailed demographics of users who view their ads and a customized subscriber database is viewed by many Netters as an invasion of privacy, particularly when they receive private e-mail messages from commercial sources. While most readers consider these unnecessary "junk mail," officials praise a marketing channel "very specifically targeted based on member profiles and usages" (Reynolds, 1990). E-mail is also subject to scrutiny by systems administrators, who of necessity must be able to access the whole system (Willis, 1994). Some analysts have called for laws like those passed in Great Britain and Canada that require anyone keeping a computer record of an individual to send it to that individual for correction (Nelson, 1994).

In general, however, privacy issues in this country have had to rely on technological fixes, rather than regulatory ones, because the status of information systems, as either public forums or common carriers, has never been made clear (Berman & Rotenberg, 1991; Branscomb, 1988; Lundstedt, 1990; Marvin, 1980). The industry itself has delayed pushing for regulation because of fears it would simply freeze new media into historical usage categories, rather than treat them as hybrid technologies (Greenwald, 1990; Martino, 1979). Encryption is the standard technological fix used, and the federal government has recently called for a standardized encryption device called the Clipper Chip to be installed in all communication equipment made in the United States. Critics, however, claim the government will then use the device to spy on citizens, using national security as justification and defeating the original protection of privacy purpose (Nelson, 1994; Willis, 1994).

Encryption also is used to protect electronic copyrights, with intensive lobbying efforts being used to ensure technological control. However, although encryption has become a science, viral attacks that can break encryption codes are proliferating (Mulgan, 1991). And once material is published by an electronic medium, there are few policy guides governing who then owns that information, which can be copied at a speed and on a scale previously unknown (Mulgan, 1991; New York

Times, 1993). With the amount of public information available online increasing exponentially, often what is being copyrighted are search strategies to find and sort public information (Wolf, 1994).

Some analysts have called for the free and open access of the net to be governed by "free and informed consent," although actually enforcing such a policy would appear to be impossible (Gould, 1989). Others argue that "Humans have not inhabited cyberspace long enough or in sufficient diversity to have developed a Social Contract which conforms to the strange new conditions of that world" (Barlow, 1994, p. 88). This view holds that old laws cannot be expanded to cover new technology, which in the case of copyright law means ideas themselves should be subject to copyright protection on electronic media. This approach would require rethinking how information is viewed: rather than using an economic model for information, an ethical one would have to be developed. Again, applying and enforcing such an approach appears problematic at best.

Legal and Regulatory Issues: Research Directions and Questions. *Because policy concerning electronic media has not been established, research efforts must be predicated in part on monitoring court cases and legal developments in this field to track changes in status as they occur. Online surveys could collect reader preferences on type or degree of censorship of public information and what level of advertiser information collection is acceptable. Ethnographic studies could determine how members of the Network Culture balance a free and open information society with their intolerance for commercial information to suggest strategies for achieving a workable balance. Interviews with industry leaders could give direction on ways to rethink the issue of electronic copyright beyond technological fixes and on how to make such schema enforceable.*

Conclusion

The Catch 22 of early electronic newspaper services was that consumers did not want to subscribe if a wide range of services was not available, but information providers did not want to spend development money on systems that had no subscribers. The linking of electronic newspapers with established information services bypasses this problem, although newspapers establishing themselves on bulletin boards may still be caught in the dilemma. Concern also remains over whether the personal computer remains the best delivery vehicle. Although penetration rates have risen to one-third of all households, indications are the rate is flattening. Conversely, the demographics of these households may be sufficiently attractive to balance out the costs and learning curve associated with introduction of a new device. Additionally, the literature shows that early electronic newspapers failed to attract a sufficient subscriber base in part because they ignored user preferences. The services concentrated on delivering information retrieval, ignoring market research that demonstrated users were more interested in pragmatic communication services (Aumente, 1987; Charon, 1987; Deveze, 1988). But simply asking users what they prefer in an electronic newspaper is problematic because most consumers are unaware of the range of options and how they might use them over time.

Given that electronic newspapers offer advantages that other media lack, academic research conducted in close partnership with industry providers is necessary if this new generation of e-papers is to become a viable medium and live up to its promise. That research must be far ranging, addressing not just issues of appropriate content and technology but the larger concerns of the economic, political, social, and ethical ramifications of the networked world. A variety of methodologies is necessary to answer these concerns, including archival, cross-cultural evaluation and sharing of information, and in-depth interviews with industry leaders. Ethnographic methods are needed to discover the meaning of the electronic forum for its regular users. Participant observation, in-depth interviews, and focus group methods with industry providers, users, and non-users are needed to establish the issues of direct concern. Survey data can be collected using traditional methods and through online surveys, allowing direct access to motivated users of electronic services. User activity can also be tracked through log files, which contain a complete record of all activities on a service while logged in to it. Experimental methods allow data gathering on new material and concepts that the public may encounter for the first time.

Because both the issues and the research methods are wide ranging, this paper offers only a broad sketch of work to be done. Research must play an initial role in the development of the electronic newspaper and an ongoing role in the monitoring of the many impacts of this new technology. It remains for many scholars to participate in reconciling this electronic medium with the reality that it will change.

Table 1. Online Information Services

Parameter	America Online	Compu-Serve	Delphi	GEnie	Prodigy
No. of Accounts	200,000	1,100,000	>100,000	400,000	870,000
Maximum No. of Users/Account	5	1	5	1	6
No. of Countries Served	1	135	60	30	1
Information Databases	45+	1,200	1	200	none
Encyclopedias	2	2	2	1	1
Magazines	4	200	2	na	12
News Wires/ Sports Services	1	29	3	12	1
Newspapers	2	56	none	na	4

Information compiled from Steinberg (1993) and from the services themselves.

Table 2. Newspapers Available Online.

Carrier	Originating Paper	Online Paper
America Online	Chicago Tribune	Chicago Online
	San Jose (CA) Mercury News	Mercury Center
CompuServe	Akron Beacon Journal	Same*
	Knickerbocker News/ Times Union (Albany, NY)	Same*
	Morning Call (Allentown, PA)	Same*
	Anchorage Daily News	Same*
	Atlanta Constitution/ Atlanta Journal	Same*
	Baltimore Sun	Same*
	Boston Globe	Same*
	Buffalo (NY) News	Same*
	Charlotte (NC) Observer	Same*
	Chicago Tribune	Same*
	Christian Science Monitor	Same*
	Cincinnati Post, Kentucky Post	Same*
	(Cleveland) Plain Dealer	Same*
	(Columbia) State	Same*
	Columbus Dispatch	Same*
	Dayton Daily News	Same*
	Rocky Mountain News (Denver)	Same*
	Detroit Free Press	Free Press Forum
	Financial Times	Same*
	Sun-Sentinel (Fort Lauderdale)	Same*
	Fresno Bee	Same*

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* CompuServe carries these papers online unchanged from hard copy.

Table 2 cont.

Carrier	Originating Paper	Online Paper
CompuServe (cont.)	Houston Post	Same*
	Lexington Herald-Leader	Same*
	(London) Independent	Same*
	The Guardian	Guardian
	(London) Times/Sunday Times	Same*
	(Los Angeles) Daily News	Same*
	Los Angeles Times	Same*
	Wisconsin State Journal/ Capital Times	Same*
	(Memphis) Commercial Appeal	Same*
	Miami Herald	Same*
	(Minneapolis) Star Tribune	Same*
	(New Jersey) Record	Same*
	(New Orleans) Times-Picayune	Same*
	New York Newsday/Newsday	Same*
	(Norfolk) Ledger-Star/ Virginian Pilot	Same*
	Orlando Sentinel	Same*
	Palm Beach Post	Same*
	Philadelphia Daily News	Same*
	Philadelphia Inquirer	Same*
	Arizona Business Gazette/ Arizona Republic/ Phoenix Gazette	Same*
	Pittsburgh Post Gazette	Same*
	(Portland) Oregonian	Same*
	Richmond News-Leader/ Richmond Times-Dispatch	Same*

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* CompuServe carries these papers online unchanged from hard copy.

Table 2 cont.

Carrier	Originating Paper	Online Paper
CompuServe (cont.)	Sacramento Bee	Same*
	Saint Paul Pioneer Press	Same*
	St. Louis Post-Dispatch	Same*
	St. Petersburg Times	Same*
	San Francisco Chronicle	Same*
	San Francisco Examiner	Same*
	San Jose Mercury News	Same*
	Seattle Post-Intelligencer	Same*
	Seattle Times	Same*
	USA Today	Same*
	The Washington Post	Washington Post
	Washington Times	Same*
	Wichita Eagle	Same*
The Internet	Columbus Dispatch	Columbus Dispatch
	Daily News (Halifax, N.S.)	Daily News Online
	Detroit Free Press	Detroit Free Press
	San Francisco Chronicle/ Examiner	The Gate
	Gazeta Wyborcza, Poland	Gazeta On-line
	O'Reilly Associates	GNN News
	Gazette-Telegraph (Colorado Springs)	GT Online
	L'Unione Sarda (Sardinia, Italy)	L'Unione Sarda Online
	Municipal Reporter (Oslo, Norway)	Kommunal Rapport
	News and Observer (Raleigh, NC)	Nando.Net

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* CompuServe carries these papers online unchanged from hard copy.

Table 2 cont.

Carrier	Originating Paper	Online Paper
	Palo Alto News	Palo Alto Weekly
	Norfolk Virginian-Pilot	Pilot Online
	Pittston (PA) Gazette	Pittston Gazette
	San Mateo (CA) Times	San Mateo Times
	St. Petersburg Press (Russia)	St. Petersburg Press
	USA Today	USA Today
Prodigy	Atlanta Journal/Constitution	Access Atlanta
	Los Angeles Times	TimesLink
	Newsday (New York)	Newsday
	Tampa Bay Tribune	Tampa Bay Online

Information compiled from Dalton, 1993, and from the services themselves.

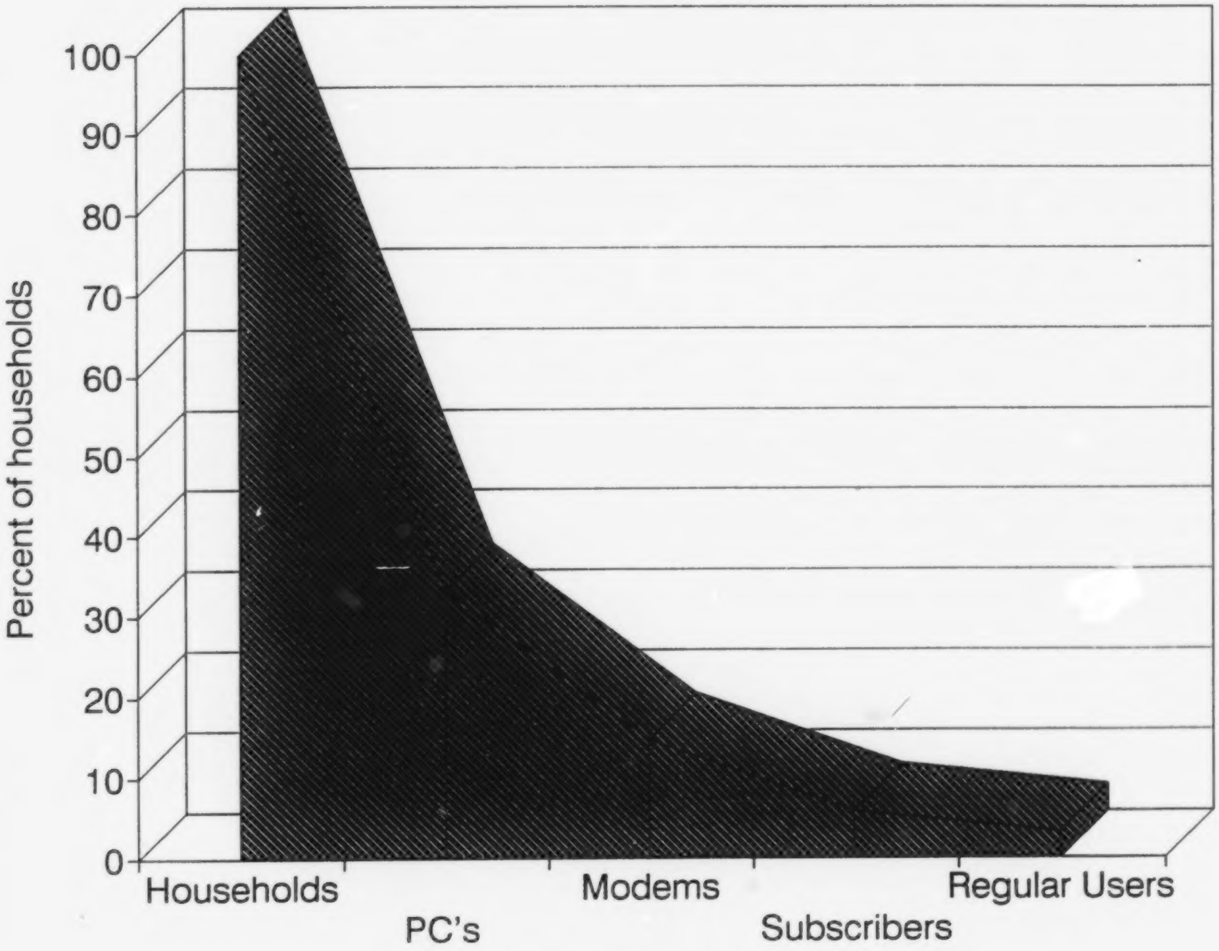

Figure 1. Penetration of Information Services Into the Home

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WHO OWNS DIGITAL RIGHTS? EXAMINING THE SCOPE OF COPYRIGHT PROTECTION FOR ELECTRONICALLY DISTRIBUTED WORKS

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ABSTRACT

WHO OWNS DIGITAL RIGHTS? EXAMINING THE SCOPE OF COPYRIGHT PROTECTION FOR ELECTRONICALLY DISTRIBUTED WORKS

The advent of new communication technologies has consistently posed problems in the area of copyright law. But the explosive growth of electronic publishing, computerized databases and other new media in recent years has produced unprecedented copyright challenges. Chief among these is the question of electronic rights. Who owns the rights, for example, to work licensed for *print* media and subsequently distributed in computerized databases? This paper explores this and related questions in the context of *Tasini v. New York Times Co.*, a copyright-infringement lawsuit pitting freelance authors against some of the countries largest media and information-retrieval companies.

WHO OWNS DIGITAL RIGHTS? EXAMINING THE SCOPE OF COPYRIGHT PROTECTION FOR ELECTRONICALLY DISTRIBUTED WORKS

The advent of new communication technologies has consistently posed problems in the area of copyright law. The invention of the phonograph and photography in the late 19th century led to the first wave of disputes over the rights to new technological uses.[1] In the early decades of the 20th century, courts wrestled with the question of whether rights to short stories and novels included motion picture rights.[2] And the arrival of television, cable, satellite, and home video ushered in an era of unprecedented copyright difficulties.[3]

Of all the technologies to emerge in the information age, however, none has spawned more pressing copyright concerns than digitalization. Digital technology--which allows text, sound, and images to be transmitted and stored in easily manipulated bits and bytes--has been credited with transforming information from simply a *means* of acquiring and managing other assets into a *primary asset* itself.[4] As digitally processed information has gained value as a commodity, judges have been forced to grapple with an increasing number of conflicts over work in electronic form.

Until recently, most of these disputes have centered on computer software.[5] In the past several years, however, the explosive growth of electronic publishing, computerized databases,[6] CD-ROM products,[7] and commercial online services[8] has produced a new generation of copyright challenges.[9] Chief among these is the issue of ownership of electronic rights. Who owns the rights, for example, to work licensed for use in *print* media and subsequently distributed in *electronic* media such as computerized databases? This question is at the center of *Tasini v. New York Times Co.*,[10] an important copyright-infringement lawsuit pending in a New York federal court. The plaintiffs, 11 freelance authors, allege that the publishers named in the suit have been "reselling" their work to database and CD-ROM producers without authorization. The writers claim that because they never granted publishers the electronic rights to their work, they retain these rights.

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[1] See, e.g., *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53 (1884); and *Edison v. Lubin*, 195 U.S. 624 (1904). The photocopier also led to disputes. See, e.g., *Henry v. A.B. Dick Co.*, 224 U.S. 1, 48 (1912).

[2] See, e.g., *Kalem Co. v. Harper Bros.*, 32 S.Ct. 20 (1911) (silent movie rights to novel); and *L.C. Page & Co. v. Fox Film Corp.*, 83 F. 2d 196 (2d Cir. 1936) (rights to "talkie" films).

[3] See, e.g., *Fortnightly Corp. v. United Artists Television*, 392 U.S. 390 (1968) (cable); *Hellman v. Samuel Goldwyn Productions*, 32 A.D.2d 287, 301 N.Y.S.2d 165 (1969) (television); and *Rooney v. Columbia Pictures*, 460 U.S. 1084 (1983) (home video).

[4] Branscomb, *Who Owns Information? From Privacy to Public Access*, 1 (1994).

[5] See, e.g. *Lotus Development Corp. v. Paperback Software International*, 740 F. Supp. 37 (D. Mass. 1990); and *Atari Games Corp. v. Nintendo of America, Inc.*, N.D. Cal. (1993).

The implications of the case for freelance journalists,[11] the media, and the information industry extend well beyond the current dispute. More than 3,000 print publications are currently distributed on computerized databases, commercial online services, and CD-ROM. If the plaintiffs win their suit, one source predicts that the "floodgates will open for other writers and artists to make similar claims."[12] Another estimates that "liabilities will go into the millions of dollars and affect thousands of writers."[13] But even more critical may be the lawsuit's precedent-setting impact. As a case of first impression, *Tasini* will help shape the legal framework for deciding who owns the rights to works distributed in media forms not yet invented.

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[6] Computerized databases are collections of data and other information, including full texts of copyrighted works, that are transmitted digitally over telephone lines to users who have modems and personal computers.

[7] CD-ROM stands for "compact disc read only memory"--a high-capacity storage medium capable of storing 600 MB of data (or about 8,000 pages of text) on a single 5-1/4 inch disc. Anyone with a CD-ROM drive (similar to a CD player) and a home computer can access information stored on CD-ROM.

[8] Examples of commercial online services include Prodigy, America Online, and CompuServe.

[9] See, e.g. *Playboy v. Frena* (839 F. Supp. 1552 (M.D. Fla. 1993) (finding of copyright infringement against a computer bulletin board operator for allowing unauthorized copying of photographs by subscribers); *Frank Music Corp. v. Compuserve, Inc.* (93 Civ. 8153 (S.D.N.Y. 1993) (pending class-action lawsuit against an online service for allowing unauthorized copying of music); and *Sega Enterprises Ltd. v. Maphia*, 30 U.S.P.Q.2d 1921, 1994 WL 132215 (N.D. Cal. Mar. 26, 1994) (grant of preliminary injunction against bulletin board operator for allowing unauthorized copying of video games).

[10] *Tasini vs. New York Times Co., Newsday, Inc., Time, Inc., The Atlantic Monthly Co., Mead Data Central Corp., and University Microfilms, Inc.*, 93 Civ. 8678 (S.D.N.Y. filed 1993).

[11] This paper considers the electronic-rights issue in terms of freelance authors only. Section 101 of the copyright statute states that staff writers own neither the initial rights nor the reproduction rights to work created as a condition of their employment.

The electronic-rights controversy also raises a number of difficult legal issues. For example, is electronic dissemination[14]--which is not addressed in the Copyright Act of 1976--considered a *new medium or use* for copyright purposes? And if so, do the rights to freelance articles created for print and distributed electronically belong to the original authors? What contract issues and recognized copyright principles govern conflicts such as this one involving "old licenses and new uses?"[15] Finally, given the long line of cases dealing with copyright disputes over new technologies, how have the courts resolved analogous claims in the past?

This article examines the electronic-rights debate by analyzing both copyright issues and case law on the granting of rights for work used in new or expanded technological domains. It begins with an overview of the dispute between freelance writers and publishers and documents some of the ways in which electronic dissemination of full-text articles has altered publishing industry usage and practice. Following this, applicable provisions of the Copyright Act of 1976 are analyzed, and an argument is made that digital display and distribution qualify as a *new use or medium* for purposes of copyright law. Finally, relevant case-law decisions in the area of copyright and new technology are reviewed to discover how they might be applied to the electronic-rights controversy.

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[12] Greene, Rights Squabble Begins Over new Media Explosion, *Variety*, 4, 8 (Jan. 2-8, 1995).

[13] Hernandez, Free-lancers and the Information Highway, *Editor & Publisher* (Dec. 11, 1993) (quoting Jonathan Tasini, plaintiff in *Tasini* and president of the National Writers Union).

[14] "Electronic dissemination" has been defined as "the transmission of information in the form of electronic signals." In this paper, the term "dissemination" has the same legal meaning as "distribution" or "publication." U.S. Congress, Office of Technology Assessment, *Intellectual Property Rights in an Age of Electronics and Information* (Washington, D.C.: Government Printing Office), 206 (1986) (hereafter cited as *Intellectual Property Rights*).

[15] The phrase "old licenses and new uses," borrowed from Baumgarten, refers to work prepared for a specific medium that is subsequently used in another medium that either did not exist or was not well-known at the time the original rights to the work were transferred (Baumgarten, Legal Issues in Electronic Publishing: Copyright, *36 Fed. Comm. L.J.*, 167 (Sept. 1984)).

I. BACKGROUND: THE CONFLICT OVER ELECTRONIC RIGHTS

A. Contractual Arrangements Between Freelance Authors and Publishers

Contractual agreements between freelance authors and publishers typically cover three areas: "the geographical scope of the rights, the formats in which the rights can be exercised, and the duration of those rights."[16] However, until recently, informal arrangements have been common, with freelance writers often submitting and being paid for work without ever expressly transferring their rights. If in writing, standard contracts between freelance authors and publishers have typically granted publishers first North American serial (FNAS) rights only.[17] Absent a written contract, publishers' rights are presumed to be limited to the "one-time" right to include a contribution in a particular collective work, in a revision of that collective work, or in a later collective work in the same series.[18] Under the copyright statute, all other rights are retained by the freelance writer. In two recent cases dealing with magazines,[19] FNAS rights have been considered by the courts as the default agreement when no formal contract was made.

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[16] National Writer's Union. (April 1994). "Statement of Principles on Contracts Between Writers and Electronic Book Publishers."

[17] FNAS rights convey to publishers the exclusive one-time right to publish a work in the United States and Canada.

[18] Magazines and newspapers are considered "collective works" under copyright law, which defines them as works "in which a number of contributions, constituting separate and independent works in themselves, are assembled into a collective whole." (17 U.S.C. @ 201(c)).

B. The *Tasini* Dispute

In the early 1990s the National Writers Union (NWU) began receiving complaints from some of its members that freelance articles prepared for print publications were being redistributed via electronic databases, CD-ROMs, and online services without the authors' knowledge or permission. On investigation, the NWU discovered this indeed to be the case: Publishers routinely resell freelancers' articles to database vendors without obtaining the electronic rights to these works. As a result, the NWU concluded that publishers, electronic database producers, and other vendors have been exploiting rights which--under copyright law--belong to freelance authors. Among the rights plaintiffs claim have been infringed "are rights of access, display, performance, reproduction, and the right to make derivative works."[20]

1. *Consideration of Publishers' Defenses*

In rebuttal, publishers might argue that: (1) The right to store and redistribute full-text articles on computerized databases and other electronic media is included in the *initial* grant of print rights; and (2) Archiving and redistribution of "back issues" of periodicals on media other than print is allowable under section 201(c) of the copyright statute and has long been custom and practice in the publishing industry.[21] The first of these arguments assumes that electronic transmission is an extension of print distribution rather than a new medium or use, an issue addressed later in this paper. The second argument relies on usage and custom in the industry, which courts frequently consider in applying copyright doctrine to intellectual property disputes.[22] Publishers representatives have noted that newspapers have been archiving and redistributing periodicals on electronic databases for more than a decade.[23] Furthermore, full-text versions of most major newspapers and magazines have long been available in public libraries on microfilm--with no previous complaint from freelance authors.[24]

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[19] *Stewart v. Abend*, 495 U.S. 207, 110 S.Ct. 1750, 109, L. Ed. 2d 184 (1990); and *Playboy Enterprises v. Dumas*, 831 F.Supp. 295 (1993).

[20] Fact sheet distributed by the National Writers Union, 4 (1994).

2. *Changes in Publishing Industry Custom and Practice*

While it is true that magazines and, particularly newspapers, have a long tradition of archiving and redistributing back issues on microfilm, and more recently on computerized databases, a reassessment of this practice is called for in light of new technological developments. Given the rapid evolution of computer technology in recent years, it is appropriate to explore whether the meaning of the terms "redistribution" and "archiving," when applied to print periodicals, mean something wholly different today than in the past. In terms of copyright, the question becomes: Is the present practice of electronically disseminating articles for profit the same practice as archiving articles primarily on microfilm for preservation and library research? A careful weighing of the facts leads to a negative response to this question.

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[21] This paper does not attempt to provide an exhaustive list of the defenses publishers might raise in the *Tasini* case. For an in-depth analysis of publishers' rights under section 201(c) of the Copyright Act, see Jollymore, Ancillary Uses of Collective Works, *Comm. and the Law*, 21-47 (1990).

[22] See, e.g., *Playboy Enterprises v. Dumas*, supra note 19.

[23] E.g., an attorney for The New York Times Co. stated that the *Times*, for example, has been archived on in-house computerized databases since 1983 (Ken Richieri, telephone interview, Mar. 16, 1995).

[24] *Id.*

Advances in computer technology, faster telecommunications networks, and high-capacity storage media have led to cheaper, larger, faster, and easier electronic transfer of information. These developments, in turn, have resulted in wider public access to and use of electronically disseminated works. A strong argument can be made that four factors related to the new electronic media have fundamentally transformed the publishing industry custom and practice of archiving and redistributing "back issues": (1) the *nature* of the media used for redistribution and storage; (2) the *behavior of consumers* who access authors' works; (3) the *expanded scope* of distribution; and (4) the *economics* associated with electronic dissemination of full-text articles. A story in *Columbia Journalism Review* documents some of these changes:

> Today's newspaper morgue has gone high-tech and the new on-line libraries are not limited to internal use. Publishers have realized that there is a substantial market for back issues. The full text of papers ranging from the *Colorado Springs Gazette Telegraph* to *The Washington Post* is now available via such commercial services as Nexis, Dialog, VU/Text, and DataTimes. Magazine publishers have also latched onto this new source of revenue.
>
> In addition to these on-line services--which are accessed by personal computers and modems--publishers and other information packagers are looking to an even newer medium: CD-ROM....Data packagers distribute CD-ROM versions of full-text newspaper and magazine databases to libraries. Several newspapers, including *The Boston Globe* and *The New York Times*, already sell compact disc collections of their back issues.[25]

As this passage indicates, *electronic media* have largely supplanted microform for purposes of archiving and redistributing post-publication magazines and newspapers. Moreover, the use of electronic media is not limited to computerized databases and CD-ROM products. Increasingly, periodical articles are being made available on consumer online services such as America On-line, Prodigy, and CompuServe. And full-text articles are now even available over the Internet.[26] In addition to receiving per-use or percentage fees from these information-retrieval services when users access or download articles, publishers frequently receive large advance royalties for initial placement of periodicals on commercial online services.[27]

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[25] Demac, Database Dollars: Whose Are They? *Colum. Journ. Rev.*, 21 (Sept./Oct. 1992), hereafter cited as Demac.

Electronic transfer of information has also changed *consumer behavior* as it relates to retrieval of periodical articles. The ease with which electronic media allow consumers to access and download individual articles is perhaps the most important of these changes--and the one with the most far-reaching implications for copyright protection of authors' works. Computerized databases and other electronic media became widely available only in the past five years. Prior to this, an individual interested in retrieving a specific magazine or newspaper article had to travel to a public library, consult a periodical index for the appropriate citation, find the microfilm version of the periodical, and painstakingly scan through it in a linear fashion until the article was located. Making copies of pages on microfilm was--and continues to be--a cumbersome and time-consuming process, often requiring the insertion of coins each time a page is copied.

Instead of a microfilm reader/printer, an individual retrieving a digitally transmitted article needs a computer, possibly a modem, and a user interface. Only a few keystrokes are required to reproduce an article on the computer screen, download it into a computer file, or print out a paper copy. Unlike microfilm, digital media allow users to conduct searches and other linking activities, and digitalization means that users can access an *individual* article in a matter of minutes without having to scroll through the entire publication. This points to an important difference between storage of periodicals on microform versus new electronic media. Whereas microfilm displays the *complete* issue of a periodical, electronic media allow only *a single article* to be displayed and accessed at a time. This feature of *non-linear access* has important implications in the electronic-rights dispute between authors and publishers. Users of electronic media never see a *complete issue* of a periodical--a fact that supports the freelance authors' contention that it is their *individual articles* rather than the *collective works* as a whole that are actually being resold to database vendors and their customers.

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[26] See, e.g., The Magazine Index, an electronic-document-delivery service on the Internet (Baker, Nicholson, "Downloading Other People's Writing," *International Herald Tribune*, Oct. 20, 1994).

[27] *Time*, for example, received $500,000 in advance royalties for making its articles available on America On-Line, and *Newsweek* struck a similar deal with Prodigy (Marke, Protection of Electronic Publication Rights, *N.Y.L. Journ.*, 5 (Jan. 17, 1995)).

Advances in computer technology and the subsequent commercialization of information have also dramatically expanded the *scope of distribution* of full-text articles during the past decade. Electronically disseminated information is not only *easier* and *faster* to retrieve today than ever before, but is available to millions *more users* in the U.S. and worldwide. Less expensive computer hardware and the introduction of high-speed modems has meant that more than 20 percent of all American households now have access to computerized databases in their homes, compared to only 5 percent in 1987.[28] Use of the Internet has also expanded rapidly: An estimated 20-30 million people in worldwide are now connected to this global network of networks, which grew by 83 percent between 1993 and

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[28] Bell, Nation Shall Network Unto Nation, *The Observer*, 5 (June 5, 1994).

1994 alone.[29] Additionally, more than 7 million Americans now subscribe to Prodigy, CompuServe, America Online, or similar consumer online services,[30] most of which did not even exist until 1990.[31] Use of online databases services such as Nexis, DIALOG, NewsNet, and DataTimes has also soared in the past decade: Between 1983 to 1993 online searches of major U.S. databases rose from 12 to 58.31 million--a five-fold increase.[32]

Finally, as these figures suggest, *economics* now play a much more central role in industry custom and practice related to archival and redistribution of "back issues." Archival and redistribution--once a routine and lowly offshoot of the production process--has become a major source of publishing-industry revenues. No longer simply distributors of print publications, publishers have joined the ranks of filmmakers, video producers, the recording industry, and other members of the burgeoning U.S. "copyright industry."[33] In 1992 the chairman of Simon & Schuster gave expression to publishing's new role when he stated,

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[29] Edwards, Cyberspace Business is Booming on the Internet, *San Diego Business Journal*, (Sept. 12, 1994). According to a government source, the Internet is growing at a rate of 10-15 percent *per month*. Clinton Administration Report on the Global Information Infrastructure 'Agenda for Competition,' Issued Feb. 15, 1995, *Daily Report for Executives*, Section M, 32 (Feb. 16, 1995).

[30] The six largest commercial online services include: CompuServe (2.7 million subscribers), America Online (2 million subscribers), Prodigy (1.3 million subscribers), Delphi (140,000 subscribers), eWorld (80,000 subscribers), and Genie (75,000 subscribers). (BRP Report Shows Phenomenal Growth in Commercial Online Services, *Multimedia & Videodisc Monitor*, 13:5 (May 1995)). Microsoft Network--due on the market in August 1995--is likely to spur this growth further. Microsoft plans to package Microsoft Network with Windows 95, which is expected to sell 10 million copies in its first year. (The Case for Microsoft, *Financial Times*, 19 (July 4, 1994)).

[31] CompuServe, the oldest commercial online service, began in 1981. Prodigy was introduced in 1990 by Sears and IBM to appeal to general consumers. Soon afterward, America Online began offering similar services to the public. (Cronk, On-line Services for Business and Pleasure, *MacUser*, 11:7, 70 (July 1995)).

[32] These figures do not include databases distributed on CD-ROM. Williams, The State of Databases Today: 1995, *Gale Directory of Databases*, vol. 1 (1995), xxi. Between 1983 and 1992, the number of Lexis and Nexis searches alone rose from 11 to 43.5 million (Hammonds and Verity, And Now, the Information Superlawsuit, *Business Week*, 48 (Jan. 10, 1994)).

[33] The U.S. copyright industry accounts for roughly 6 percent of the GNP (Wilson, Authors' Rights in the Superhighway Era, *Wall Street Journal* (Jan. 25, 1995).

"We're not just a publisher anymore, but a creator and exploiter of copyrights....We're utilizing our copyrights in the various media that other people are creating."[34]

Revenues from the sale of full-text articles to database vendors have helped make the information industry "one of the fastest growing sectors in the economy."[35] Mead Data Central, United Microfilm International (UMI), and other U.S. information-retrieval companies earned almost $10 billion in 1991, with full-text "the fastest growing segment of the market."[36] When one considers that publishers earn an estimated 10 to 30 percent of these revenues from resale of full-text articles,[37] the financial dimensions of electronic dissemination are unmistakable.

These changes in industry custom and practice, and most notably the profits associated with electronic transmission, have not escaped the notice of freelance authors, who have not, for the most part, shared in the electronic royalties earned from their work. In 1993, this situation prompted 11 freelance authors, sponsored by the NWU, to bring a copyright-infringement suit against The New York Times Co., Newsday, Inc., Time, Inc., The Atlantic Monthly Co., Mead Data Central,[38] and University Microfilms International

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[34] Bald, The Case of the Disappearing Author, 19:3, 8 (Fall 1993) (hereafter cited as Bald) (quoting Weyr, The Wiring of Simon & Schuster, *Publishers Weekly*, 33 (June 1, 1992).

[35] *Intellectual Property Rights*, supra note 14 @ 7.

[36] Demac, supra note 25 @ 21 (citing data from Simba Information Co.). In 1992 alone, Lexis and Nexis--electronic databases owned by defendant Mead Data Central--produced $494.8 million (Mathews, Jay. (December 17, 1993). Writers Sue on Story Use by Data Services, *The Washington Post*, p. C3). And 1993 revenues for University Microfilm International (UMI)--another of the defendants in the *Tasini* lawsuit--totaled $138 million, with projected increases of about 12 percent annually (Maurer, Michael. (June 13, 1994). Microfilm Pioneer Plans for Tomorrow, *Crains Detroit Business*).

[37] Demac, supra note 25 @ 21.

[38] Mead Data Central owned the Lexis-Nexis system until Jan. 1, 1995, when it was sold to Reed-Elsevier. The Nexis database carries full-text articles from *Newsday*, *New York Newsday*, *The New York Times*, *Sports Illustrated*, and *The Atlantic Monthly*.

(UMI).[39] As NWU's director has stated,[40] the overwhelming impetus for the lawsuit is economic: Freelance authors believe that they should receive monetary compensation for the exploitation of their work by publishers, computerized database providers, commercial online services, CD-ROM producers, and other information-retrieval services.

II. COPYRIGHT LAW AND EMERGING TECHNOLOGIES

A. Historical Overview

Copyright law and technology have always been inextricably bound. The first copyright statute, passed in England in 1709, was created in response to mass copying and distribution of authors' works following the invention of the printing press.[41] U.S. copyright law, which dates to 1790, has also been shaped by new communication technologies:[42] In 1802, the statute was altered to extend protection to musical compositions, in 1831 to incorporate prints, in 1856 to include dramas, in 1865 to cover photographs, in 1870 to encompass works of art, and finally, in 1976, to add radio, film, television, audio recorders, and home video.[43] Despite constant tinkering by Congress, however, copyright law has remained notoriously sluggish in responding to new media forms. This technological lag is exacerbated by the rapid growth and sophistication of recent media developments. As one legal scholar wrote,

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[39] UMI distributes periodicals, including *The New York Times*, on CD-ROM.

[40] Pallante, Maria, from a telephone interview on Mar. 23, 1995.

[41] 1710, 8 Anne, ch. 19.

[42] See, e.g., *Sony Corp. of Am. v. Universal City Studios*, 464 U.S. 417, 430-31 (1984) ("From its beginning, the law of copyright has developed in response to significant changes in technology....").

[43] In 1976, Congress also attempted to bring copyright law into line with photocopiers and computers by establishing the National Commission on New Technological Uses of Copyrighted Works (CONTU). The 1980 amendments to the Copyright Act of 1976 (@@ 101 and 117) included CONTU's recommendations.

> As the pace of technological change quickens, Congress seems less and less able to adjust copyright laws to the changes. In the two centuries since it passed the first American copyright act, it has been playing catch-up with new technologies--first photographs, then phonograph records, motion pictures, radio, broadcast television, and cable television--usually about twenty years behind the new technologies.[44]

The arrival of digital technology is no exception to this pattern.[45] One result is that judges attempting to settle disputes over digital rights have been forced to do so without benefit of Congressional guidance. When a specific technology--such as digital display and transmission--is not specifically covered in the federal copyright statute, courts rely on the following: (1) relevant copyright provisions; (2) contractual agreements that specify what rights were transferred and evidence, such as expert testimony, that sheds light on the intent of the contracting parties; (3) industry custom and usage; and (4) analogous case-law opinions addressing the use of old content in new media. Each of these is discussed below in the context of the electronic-rights dispute.

B. Scope of Freelance Authors' Rights under the Copyright Act of 1976

Section 102 of the United States Code establishes the general scope of authors' rights as encompassing all "original works of authorship" at the time they are "fixed in a tangible medium of expression."[46] With few exceptions,[47] copyright law vests *initial ownership*[48] of a work in the work's creator and grants authors broad license to exploit their work.[49] Section 106 affords authors a bundle of five exclusive rights, including the right to: (1) copy the work; (2) prepare derivative works; (3) distribute copies publicly; (4) perform the work publicly; and (5) display the work in public.[50] Under copyright law, no one may exercise these rights without express authorization from the original author.

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[44] Goldstein, *Copyright's Highway: From Gutenberg to the Celestial Jukebox* (New York: Hill and Wang), 32-33 (1994).

[45] Digital sampling provides just one example of the poor fit of digital technology within the scope of existing copyright doctrine. See, e.g., Kravis, Does a Song by any Other Name Still Sound as Sweet?: Digital Sampling and its Copyright Implications, *43 Am. U.L. Rev.*, 231 (1993). .

[46] Digitalized works are considered "fixed" in a digital code consisting of ones and zeros. H.R. Rep. No. 1476, 94th Cong., 52 (1976), hereinafter cited as "House Report." According to the 1976 Act, some original works of authorship that are "fixed in a tangible medium" are *not* protected by the statute. For example, ideas, processes, methods of operation, and similar elements are not copyrightable (17 U.S.C @102(b)).

Since passage of the Copyright Act of 1976, the rights described above are presumed to be "divisible"--that is, authors may exploit each right *separately*.[51] The House Report accompanying the 1976 Act explained that the rights granted in Section 106, "though closely related, are independent.... Infringement takes place when any one of the rights is violated: where for example, a printer [illegible] copies without selling them or a retailer sells copies without having anything to do with their reproduction."[52]

In the case of articles prepared by freelance authors, the principle of divisibility means that an author can sell off any single right or combination of rights, including print, foreign, syndication, reprint, anthology, and/or electronic rights--or retain any of these.[53] Only two means exist for the transfer of rights by an author to another party: (1) an express

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[47] Exceptions include the work-made-for-hire doctrine, which grants employers the initial rights to works created by authors as a condition of their employment (17 U.S.C. @ 101).

[48] 17 U.S.C. @ 101, 201(a).

[49] 17 U.S.C 17 @ 102 lists eight categories of "works of authorship," including literary works.

[50] 17 U.S.C.S. @ 106.

[51] For an explanation of the principle of divisibility, see Chafee, Zechariah, Reflections on the Law of Copyright, pt. 1, *45 Colum. L. Rev.*, 503, 519 (1945).

[52] House Report @ 61 (1976).

[53] 17 U.S.C. @ 201(d)(2).

transfer of ownership (i.e. a written contract);[54] or (2) a written agreement that the work in question was produced in a "work-for-hire" relationship.[55] As a rule, any right *not expressly granted in one of these two ways* is reserved by the owner. Moreover, the author retains the underlying copyright in a work even if the rights to it are expressly transferred.[56]

C. Does Electronic Transmission Constitute Unauthorized "Copying" or the Creation of a Derivative Work?

Because it is generally necessary for a work to be copied in order to execute the other four rights, the right to copy is considered unique among the five rights granted to authors.[57] Authors who sue for copyright infringement must meet the requirements of the two-prong test set forth in *Arnstein v. Porter*.[58] They must prove both ownership of the work in question and unlawful appropriation of the work by an infringer.

One of the questions raised by the *Tasini* dispute is whether electronic transmission of work created for print publication constitutes unauthorized "copying." The term "copies" is defined in the statute as "material objects...in which a work is *fixed* by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or *with the aid of a machine or device* [italics added]."[59] In order to prove improper appropriation, a plaintiff must provide either: (1) direct evidence that a defendant copied the work in question; or (2) circumstantial evidence that the defendant had *access* to the work and that the infringing work is "*substantially similar*" to the original work.[60]

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[54] 17 U.S.C. @204(a).

[55] A work-for-hire relationship must be established in writing *prior* to the creation of the work (17 U.S.C. @ 201(b)). This was underscored recently in *Playboy Enterprises, Inc. v. Dumas* (supra note 19), (rejection of a work-for-hire rebuttal on the basis that a written agreement was not made *prior* to the work's creation).

[56] 17 U.S.C. @ 202 distinguishes ownership of rights from ownership of a work itself.

[57] Patterson and Lindberg, *The Nature of Copyright* (Athens, GA: The Univ. of Georgia Press), 150 (1991).

[58] 154 F.2d. 464 (2d Cir. 1946), *cert. denied*, 330 U.S. 851 (1947).

By these definitions, electronic transmission of full-text articles would appear to satisfy the requirements for unauthorized copying. Transferring a print article to a computer and subsequently displaying it on a computer screen, for example, would seem to qualify as "communication...with the aid of a machine or device," and as such, might be considered "electronic" or "digital copying." The fact that print articles are generally "scanned"[61] or typed into a computer also makes it difficult to argue against the "substantial similarity" of print and electronic versions of the same article.[62] Finally, it seems reasonable to conclude that when a user "downloads" and prints an article--thereby obtaining both digital and hard-copy duplicates--copying in the most generally accepted sense of the word has occurred.

Indeed, in two recent cases,[63] federal district courts concluded that digital transmission --such as the up- and downloading of copyrighted computer files[64]--constitutes "fixation" and, as such, represents an infringement of both the reproduction and distribution rights set forth in the Copyright Act.[65] Judges in these cases found the act of loading software into a computer's random access memory (RAM) equivalent to "making a copy" under section 101 of the Copyright Act. Given the similarity between many of the fundamental characteristics of computer file transfer and "copying" as defined in the copyright statute, the rulings in *Peak* and *Advanced Computer* are unlikely to be dismissed as aberrations. As one legal scholar pointed out, "[F]ile transfer does look a great deal like the kind of activity that falls squarely within the copyright law's sights. After all, once the transfer is completed, where there was once one file, now there are two, each indistinguishable from the other. How different is that from making a photocopy?"[66]

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[59] 17 U.S.C. @ 106(1).

[60] *Sid & Marty Krofft Television Prods. v. McDonald's Corp.*, 562 F.2d 1157, 1162 (9th Cir. 1977).

[61] This is typically accomplished with a "scanner," which works by assigning numerical values to components of the text, which is then stored and transmitted digitally.

[62] Substantial similarity is met through a two-part test: (1) an "extrinsic test," by which an expert testifies that the two works are substantially similar; and (2) an "intrinsic test," by which an ordinary observer examines the two works side-by-side and testifies to their similarity. See *Sid & Marty Krofft Television Prods. v. McDonald's Corp.*, supra note 60.

[63] *MAI Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511 (9th Cir. 1993), cert. dismissed, and *Advanced Computer Services v. MAI Systems Corp.*, 845 F. Supp. 356 (1994).

[64] The computer files at issue in these cases were operating systems and diagnostic software.

A related question raised by *Tasini* is whether electronic dissemination amounts to unlawful preparation of a *derivative work*. A "derivative work" is defined in 17 U.S.C. @101 as:

> a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgement, condensation, or any other form in which work may be recast, transformed, or adapted.

In addition to protecting the right of authors to make copies of their work, section 106 of The Act grants them exclusive control over derivative works prepared from the original. The author of a short story, for example, has the exclusive right to prepare a screenplay based on the original work. Similarly, if a film company wishes to make a movie based on a screenplay, it must obtain written permission from the author before doing so. In situations involving computers and other new communication technologies, however, the definition of a derivative work has been more difficult to apply.[67] As a general rule in these cases, courts have construed authors' derivative rights broadly.[68]

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[65] The "Green Paper" distributed in July 1994 by the government's Working Group on Intellectual Property Rights cites *MAI Systems Corp. v. Peak* and *Advanced Computer Services v. MAI Systems Corp.* to support its proposal to amend @106 of the copyright statute to grant authors the express right to digitally transmit their works. Specifically, the Green Paper proposes that the phrase "or by transmission" be inserted after the word "lending" in the portion of 17 USC @106(3) that grants authors the exclusive right to "distribute...copies to the public by sale or other transfer of ownership, or by rental, lease, or lending."

[66] Post, New Wine, Old Bottles: The Evanescent Copy, *The American Lawyer*, 103 (May 1995).

Although an in-depth discussion of derivative works and digitally processed information is beyond the scope of this paper, a convincing argument can be made that as print articles undergo *digitalization*, they are *"recast, transformed or adapted"* in accordance with the definition of derivative works. In a recent Supreme Court case,[69] the justices elaborated on the meaning of "transformative," holding that a derivative work should be judged primarily by "whether and to what extent [it] is 'transformative'"--that is, the degree to which it adds "something new, with a further purpose or different character, [that] alter[s] the [original work] with new expression, meaning, or message." Although the question of whether digitalization results in a new meaning or message is a philosophical problem, transforming a text into numerical signals may certainly be said to add something substantially "new, with a further purpose or different character."

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[67] For a discussion of the difficulty courts have had in applying the derivative-works concept to computer programs, see Wurzer, Infringement of the Exclusive Right to Prepare Derivative Works: Reducing Uncertainty, *73 Minn. L. Rev.*, 1521 (June, 1989). In determining whether a use is derivative, the courts rely on the definition of "derivative works" and apply a substantial-similarity test similar to the test for unauthorized copying. See, e.g., *Vault Corp. v. Quaid Software, Ltd.*, 847 F.2d 255, 267 (5th Cir. 1988) and *Litchfield v. Spielberg*, 736 F.2d 1352 (9th Cir. 1984).

[68] For a discussion of the courts' "expansive recognition" of authors' derivative rights, see Ginsburg, Article Creation and Commercial Value: Copyright Protection of Works of Information, *90 Colum. L. Rev.* 1865, 1872 (1990).

[69] *Campbell v. Acuff-Rose Music, Inc.*, 114 S. Ct. 1164 (1994).

D. Economic Considerations for Authors

The copyright clause in the U.S. Constitution empowers Congress "[t]o promote the Progress of Science and Useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[70] In line with the presumed intent of this clause, the courts have interpreted the purpose of copyright to be two-fold: (1) "to motivate the creative activity of authors and inventors by the provision of a special reward";[71] and (2) to "advance the public welfare through the talents of authors and inventors in 'science and useful' arts."[72] The first of these purposes expresses a dominant principle of copyright law: economic compensation for authors in exchange for creative endeavor. By granting authors limited-monopoly rights to their work, the Constitution's framers recognized the importance of economic incentives to drive creativity and hence contribute to "the general public good."[73] The market principle of copyright has been widely recognized by the courts and adopted in the application of copyright law to disputes over rights, including the fair use,[74] work-for-hire, and derivative works doctrines.[75]

The Court in *Campbell* also applied an economic test to the derivative rights at issue in that case. The majority limited protection for a derivative work to "only those [uses] that creators of original works would in general develop or license others to develop."[76] Although this may not at first seem to have bearing on the *Tasini* dispute, it may have significant implications if the *Tasini* court applies a "market-effect" test to the case. In the past, individual freelance authors have not attempted to license the electronic rights to their articles to information-retrieval companies, and one commentator has argued that "economies of scale" would make it unlikely for database operators to deal with individual authors.[77] Yet there is nothing to prevent authors from forming a collective to deal directly with database operators. In fact, the NWU is currently working on an "umbrella group" that would act as an agent for freelancers, marketing articles to information providers in much the same way that magazine and newspaper companies now do so.[78] By denying authors the electronic rights to articles created for print, publishers prevent them from exploiting such secondary markets.

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[70] U.S. CONST. art. 1, @ 8, cl. 8.

[71] *Sony Corp. of Am. v. Universal City Studios*, supra note 42 @ 429.

[72] *Maser v. Stein*, 347 U.S. 201, 219 (1954).

[73] *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975) ("the immediate effect of our copyright law is to secure a fair return for an author's' creative labor. But the ultimate aim is, by this incentive, to stimulate artistic creativity for the general public good").

[74] See, e.g., *Harper & Row Publishers v. Nation Enterprises*, 471 U.S. 539 (1985) (U.S. Supreme Court considered potential market effect in deciding that quotations from an unpublished manuscript constituted infringement).

[75] For example, in ruling that a faster version of a video game constituted unauthorized copying, the Supreme Court relied heavily on the "economic effect" of the infringement on the plaintiffs ability to prepare derivative works (*Midway Mfg. Co. v. Artic International, Inc.*, 464 U.S. 823 (1983)).

Authors' representatives argue that creators have a fundamental right to share in the enormous revenues that publishers, electronic database producers, and other information providers earn from their labor. While acknowledging that publishing companies and database vendors deserve compensation for the value they add to works of authorship, writers believe it unequitable for these companies to reap *all* of the rewards associated with re-use in new media. This is particularly true when authors' ability to exploit their work in derivative forms--such as the marketing of "spin-off articles"--may be hampered by electronic dissemination. Digital media make articles available to millions of additional readers worldwide than is possible through print distribution. One proponent of authors rights offered the following scenario to illustrate the negative potential of this increased access:

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[76] See supra note 69.

[77] Jollymore, supra note 21 @ 44.

[78] Maria Pallante, from an interview conducted on Mar. 23, 1995.

> [A] story a writer might publish in [*Ladies Home Journal*], say, a first-person account of the author's battle against cancer, could, without the author's permission, later find its way into a commercial online database, a CD-ROM compendium on women's health, a book anthology, a magazine abroad, or even a TV movie of the week, without a penny of additional compensation to the writer.[79]

Articles disseminated electronically are also more vulnerable to modification, copying, transfer to other users, and other examples of copyright infringement. As Bald has pointed out, authors whose works are transmitted electronically without permission or compensation face "double jeopardy": They not only confront the prospect of increased copyright violations by users, but "the potential for stepped-up exploitation...by the media industries," as well.[80]

III. COPYRIGHT AND EMERGING TECHNOLOGIES

A. Is Electronic Transmission a "New Medium or Use" or an Extension of Print?

Of central importance in the dispute over electronic rights is the question of whether electronic transmission of print articles constitutes a "new use or medium" for copyright purposes. No prior cases have addressed this question directly, and the Copyright Act is silent on the issue, as well. However, several key distinctions between electronic and print media demonstrate that electronic display and transmission should qualify as a *new use or medium*--rather than an *extension* of print.

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[79] Bald, supra note 34, p. 8.

[80] *Id.*, p. 9.

A number of scholars have pointed to the non-linearity of electronic media as one of its most distinguishing characteristics. Whereas a book or periodical is a linear, "frozen structure," an electronic medium "encourages...an *interaction* with data that is different from reading a book" [emphasis added].[81] Work in digital form also lacks the tangible appearance of work in print form. As Samuelson and Glushko point out, because digital works "are stored as a sequence of high and low voltage signals in computer memory [they]....are virtually invisible to users/readers."[82] This, in turn, distinguishes the way digital works are marketed and purchased. Rather than a tangible version of an electronically disseminated article being sold, what is actually traded is "access to the copy in limited slices of time or quantity."[83] Along with non-linearity, interactivity, and intangibility, electronic media also differ from traditional media forms in the following ways:[84] (1) the bulk of information that can be processed and stored; (2) the speed at which information can be transmitted; (3) the ease with which exact reproductions of a work can be made; and (4) the ease and speed with which modifications or revisions to a work can be accomplished.

An alternative means of gauging whether digital transmission constitutes a new use or medium is to consider the criteria courts have used to resolve similar problems in the past. In *Bartsch v. Metro-Goldwyn-Mayer*,[85] the court considered the question of whether television was a "process analogous to cinematography." Disagreeing with a district-court opinion that the two were indeed comparable, the appeals court described television as a "nigh miraculous process whereby these images actuate airwaves so as to cause electronic changes in sets in millions of homes which are then 'unscrambled' or 'descanned' and thus produce pictures on television screens."[86] In *Cohen v. Paramount Pictures Corp.*,[87] a Ninth Circuit court defined home video exhibition as distinct from television exhibition, explaining that the two media were *distributed* in clearly different ways. Whereas television signals were transmitted from broadcast stations to homes equipped with antennas, video technology required viewers to possess only a videocassette recorder connected to a television monitor. Moreover, the court noted that home video not only enabled *users* rather than *broadcast stations* to control the choice of content, but also allowed users to *replay* the content.[88] The distinction between home video and television was affirmed in 1993 in *Rey v. Lafferty*.[89] The appellate court in this case cited the differences enumerated in *Cohen*, adding that "playing a videocassette on a VCR does not require a standard television set [but only]...a monitor capable of displaying the material on the magnetized tape."[90]

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[81] Katsh, *The Electronic Media and the Transformation of Law* (New York: Oxford University Press), 95 (1989).

[82] Samuelson and Glushko, Intellectual Property Rights for Digital Library and Hypertext Publishing Systems, *6 Harv. Journ. of L. & Tech.*, 241 (Spring, 1993).

[83] *Intellectual Property Rights*, supra note 14 @ 207, n. 109.

[84] Katsh, supra note 81 @ 21.

[85] 391 F.2d 150, (2d Cir. 1968).

From these three opinions, the following elements would appear to be important in distinguishing a new use or medium from an existing medium: (1) the technological means by which a medium *delivers* content (e.g. mail or freight delivery, radio signals, magnetic tape, cable or telephone lines); (2) *where* the content is delivered and used (e.g. homes, businesses, movie theaters, libraries); and (3) how users *access* the content (e.g. operation of a microfilm machine, television set, videocassette recorder, or computer). Alben offers one additional criterion that judges may consider when deciding whether a new technology constitutes a new medium or use or an extension of an existing one: whether the use has created new economic markets.[91]

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[86] *Id.* @ 153.

[87] 845 F.2d 851 (9th Cir. 1988).

[88] *Id.* @ 853-854.

[89] 990 F.2d 1379 (U.S. App. 1993).

[90] *Id.* @ 1389.

Judged in terms of these four criteria, electronic transmission easily qualifies as a new use or medium rather than an extension of an existing medium. Digital media such as computerized databases deliver information by transferring content in the form of bits and bytes over telephone and cable lines--a mode clearly distinct from the mail or freight delivery of print media, for example. As discussed previously, digital media is also unique in the way *users access* and *make use of* the content it delivers. And finally, digital transmission--as evidenced by the impressive growth of database vendors, commercial online services and other information-service industries--has certainly created new economic markets.

B. Case Law on Old Licenses and New Uses

Since the turn of the century, judges have struggled to resolve copyright disputes over emerging technologies. Yet because the contractual language and specific technology involved is unique to each dispute, the body of case law developed in this area is far from consistent.[92] Despite this shortcoming, a careful analysis of case-law opinions on copyright and new media uses reveals several general trends that can be applied to the electronic-rights controversy.

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[91] Alben, Future Technology Clauses and Future Technologies: Legal Roadblocks to New media Uses Along the Information Super Highway, *Entertainment L. Reptr.*, 15:12 (May 1994).

[92] Opinions in these cases have tended to split along two lines: (1) a "broad-construction" approach, in which judges have ruled in favor of licensees even when new technologies were not specifically mentioned in the contract; and (2) a "strict-construction" approach, in which judges have limited distribution rights to those enumerated in the contract. (Nimmer and Nimmer, *Nimmer on Copyright*, 10.10 B @ 10-86 (1993).

When confronted with copyright cases involving conflicts over new technological uses, courts first examine the terms of any contracts made between the parties involved. Contractual language is scrutinized to determine what rights were conveyed by an author,[93] as well as to discover the *intent* of the contracting parties.[94] As described previously, until recently, freelance writers--including the plaintiffs in the *Tasini* lawsuit--either made oral agreements or expressly transferred only first-time rights to publishers. Since these contracts contain *no reference* to future technologies, they are almost certain to be interpreted by the court as ambiguous or as granting limited rights. Based on a review of relevant cases, this factor should work in favor of the freelance authors' claim that they retain the electronic rights to their work.

For example, in one line of cases, judges have construed distributors' rights narrowly in the absence of an express agreement, when the *distributors* rather than the authors prepared the contracts, or where contracts have been ambiguous or silent on future uses. Two recent such cases include *Bourne Co. v. Walt Disney Co.*[95] and *Rey v. Lafferty*,[96] both of which involved disputes over videocassette rights. The first centered on whether the right to perform an original musical composition in motion pictures included the right to distribute it in videocassettes, as well. Among other rights, the contract granted Disney "public performance" rights, which--absent more specific language--the *Bourne* court refused to apply to videocassette performance rights. In *Rey v. Lafferty*, a federal appeals court interpreted an ambiguous contract to infer an *absence of intent* on the part of the contracting parties and therefore denied the grantee the right to exhibit a film contracted for television on home video.[97]

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[93] See, e.g., *Cohen v. Paramount*, supra note 87.

[94] See, e.g. *Philadelphia Orchestra Assn. v. Walt Disney Co.*, 821 F.Supp. 341, 345 (1993).

[95] Copyright L. Rep. (CCH) P 26,934, (S.D.N.Y. 1992).

[96] See supra note 89.

Courts have been similarly inclined to construe grantees' rights narrowly in cases in which the author-licensor was perceived as lacking awareness of a work's potential future uses. Lack of sophistication in this sense may prove an important consideration in *Tasini*: Freelance authors are self-employed, tend to be naive about financial matters, are generally isolated from the business community, and are rarely represented by counsel when they enter agreements with publishers. The first case in which business acumen was considered a factor in the granting of new-media rights was *Ettore v. Philco Television Broadcasting Co.*[98] Here, the court determined that the plaintiff--a prize fighter who had licensed the motion picture rights to his boxing match with Joe Louis in 1936--was not "an experienced businessman" and had no reason to foresee the development of commercial television. In a more recent case,[99] a court ruled that an elderly author of children's books had no reason to know about or anticipate the use of videocassette technology when she sold the television rights to her work. The court made special note of the fact that she had not been represented by counsel at the time she entered the agreement.

In each of these cases, the specific technology in dispute did not exist at the time the contracts were signed, and the contractual language made no reference to future technologies. However, even when contractual agreements *have* included broad language--including future-technology clauses such as "all media now known or hereafter conceived or created"--courts in some cases have denied purchasers the rights to new technological uses. For example, in 1991, a New York court ruled that a contract granting motion picture rights "for broadcasting by television or any other device now known or hereafter to be made known" did not include videocassette rights.[100] And in a 1993 case,[101] a Ninth Circuit court ruled that a grant containing the clause "by television and by any other technological, mechanical or electronic means, method or device now known or hereafter conceived or created" did not encompass videocassettte rights.

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[97] *Id.* @ 1388.

[98] 229 F. 2d 481 (3d Cir. 1955).

[99] *Rey v. Lafferty*, see supra note 89.

Even those opinions that have favored the rights of grantees may be interpreted as supporting freelance authors' electronic rights. As a rule, the contractual language in such cases has been considerably broader than that found in standard contracts between freelance writers and publishers. In *Bartsch*,[102] the most prominent case in the "broad-construction" series of opinions, the licensor granted MGM the right "to copyright, vend, license and exhibit such motion picture photoplays throughout the world." The word "exhibit" was interpreted by the *Bartsch* court to include television--which was known at the time the contract was executed. The *Bartsch* court established a three-prong test, which has been used in a number of cases since, that asks the following questions: (1) Was the new use foreseeable? (2) Did the plaintiffs reserve the rights to the new use? and (3) Were the rights granted in the contract broad enough to include distribution in the new medium?

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[100] *Tele-Pac Inc. v. Grainger*, 168 A.D.2d 11, 79 (N.Y.2d 822 1991).

[101] *Subafilms, Ltd. v. MGM-UA Home Video, Inc.*, 988 F.2d 122, (9th Cir. 1993).

[102] See supra note 85.

Applied to *Tasini*, at least one of these questions would likely yield negative results: In light of freelance authors' general lack of sophistication in business matters, a strong argument could be made that they could not reasonably have been expected to anticipate the phenomenal growth of computerized databases,[103] CD-ROM products, and commercial online services at the time their contracts were executed.[104] As a result, the plaintiffs in the case did not expressly reserve electronic rights in their contracts. The third question is the most important one in the electronic-rights dispute, and also the most difficult to predict: Whether the *Tasini* court will construe one-time print-publishing rights as broad enough to encompass electronic rights is the fundamental issue of the dispute.

A final factor that might have bearing on how the *Tasini* court decides the case relates to revenues earned from the new technological use and/or the economic impact of this use on the market value of the original work. The potential impact of a new technology on the market for the original work was a consideration in a trio of early opinions on old licenses and new uses. Judges in *Frohman v. Fitch*,[105] *Harper Bros. v. Klaw*,[106] and *Manners v. Morosco*[107] determined that including motion picture rights in a grant of stage-play rights would reduce the market value of the plays involved. If the plaintiffs in *Tasini* can show that the electronic display and transmission of their articles decreases the value of these articles in ancillary markets, the court may take an approach similar to these three cases. A more likely possibility, however, is that the court will consider evidence of "unjust enrichment,"[108] a concept introduced in a more recent case. Upon consideration of the profits involved in the distribution of the plaintiff's work on home video, the judges in *Cohen v. Paramount*[109] concluded that, "The holder of the license should not now 'reap the entire windfall' associated with the new medium.'"[110] In view of the substantial revenues earned by publishers, database providers, and online services from the electronic redistribution of freelance-written articles, an "unjust enrichment" argument advanced by the plaintiffs in *Tasini* would appear to have weight.

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[103] The earliest appearance of the term "data base" in Webster's Ninth New Collegiate Dictionary was in 1981, reflecting the youth of the database industry.

[104] The articles in dispute were written between 1988 and 1993.

[105] 164 A.D. 231, 149 N.Y.S. 633 (1914).

[106] 232 F. 609, S.D.N.Y. (1916).

[107] 252 U.S. 317 (1920).

IV. CONCLUSION

Since the turn of the century, courts have wrestled with copyright disputes arising from the invention of new communications technologies. In some of the earliest cases, judges ignored the distinction between an existing media form--say a stage play--and an emerging technology such as silent motion pictures.[111] Over time, however, case law has fashioned a presumption that rights granted for one use do not necessarily apply to use in a new medium --particularly in the absence of an express contract relinquishing additional rights. The question of whether this presumption will hold true for the new electronic media has far-reaching implications for authors' rights, the continued viability of copyright law, the economic impact of new media, and ultimately, the way in which the legal framework governing new technologies and copyright takes shape in the future.

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[108] Shulman, Old Materials, New Uses: Licensing for Interactive Media, *N.Y. L. Journ.*, 1 (Feb. 9, 1994).

[109] See supra note 87.

[110] *Id.* @ 854.

[111] Wadlow and Blakeley, *Multimedia and the Law* (New York: Practising Law Institute), 67 (1994).

New technologies breathe new value into old content. This was true of the invention of cinema 100 years ago and continues to apply to more recent technologies, including electronic dissemination of texts on computerized databases and other new electronic media. If freelance authors and other creators are left out of the monetary flow that originates from the use of their work in new media, it seems logical that their incentive to create new works will be diminished. Aside from having a potentially detrimental effect on the production of works and the marketplace of ideas, refusing to compensate authors for additional uses of their work violates the underlying economic theory of copyright law.

The introduction of new media forms continuously upsets society's cultural, political, and economic equilibrium. Yet the purpose of copyright is to correct imbalances where they occur and where they threaten the goals of copyright set forth in the Constitution and by the courts. Judges must continually strive to balance the rights of authors with those of users, publishers, and other information and media industries. As Branscomb has stated,

> We are in the process of designing a new paradigm for our information society, one that offers room for great economic, intellectual, social, and political growth. It must be based upon the recognition that information is a valuable asset whether the claimant is an individual, a corporation, a national entity, or humanity at large.[112]

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[112] Branscomb, supra note 4 @ p. 185.